Predator Management in Montana

Symposium Proceedings

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Coordinated by:
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Montana Fish, Wildlife & Parks

PREDATOR MANAGEMENT IN MONTANA SYMPOSIUM
JANUARY 8, 2000
BILLINGS, MONTANA

PROCEEDINGS

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Many thanks to our additional participants: Montana Department of Livestock, Montana Wildlife Federation, Defenders of Wildlife, Montana Stockgrowers Association, U.S. Fish and Wildlife Service, and National Park Service.

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Predator Symposium
Saturday, January 8, 2000

Welcoming Remarks: Jean Johnson – Executive Director, Montana Outfitters & Guides Association (MOGA)

My name is Jean Johnson. I work for the Montana Outfitters & Guides Association. And on behalf of the officers and members of MOGA I'd like to welcome you all here and thank you all for coming.

Our association has had a growing concern and alarm over the condition of the predators in Montana, and we've asked ourselves the last several years what we could do about it. Alone, probably not much; but working all together, maybe quite a lot. So we have been working with Fish, Wildlife & Parks for a year now to put this symposium together. It's an information gathering day and we are here to learn from one another and to listen to one another. The good book says seek first to understand and then to be understood. Our challenge today is going to be to listen to one another with a commitment to learning, because it's only from an educated position that we can really advance to where we need to go.

Chris Smith, Deputy Director of Fish, Wildlife & Parks will make a few remarks and then we'll begin our program. Thank you again for coming.

Introduction: Chris Smith – Deputy Director, Montana Fish, Wildlife & Parks

Good morning and thank you, Jean. On behalf of Director Pat Graham who could not be here today, I want to also welcome all of you to this symposium, and to thank Jean and the Montana Outfitters and Guides Association for their interest in approaching us last year and recommending that we have this session. Pat is sorry that he could not be here today. There was another meeting scheduled involving the Directors of all the western state fish and game agencies with top officials from the Fish & Wildlife Service to talk about the Endangered Species Act, state and federal relations and a number of other topics that Pat felt were important for him to participate in. That, and the fact that he knew that I'd spent some 20-odd years working with predators, contributed to my being here and him being there.

I do come to Montana relatively recently. I've been here for about two years as Deputy Director for Fish, Wildlife & Parks; but the preceding 20 plus years I spent in Alaska as a biologist, a researcher, a manager and administrator working with predator/prey systems involving wolves, black bears, grizzly bears, and coyotes preying on deer, caribou, moose, and sheep. And my experience in Alaska taught me a number of things about predator/prey systems. First of all, they are extremely complex and highly variable. There are some general principles that apply across the board to predator/prey systems, but every one is a little unique and there's a lot of

variables we can't predict or control, but that we have to deal with in managing predators and prey. Secondly, people hold very strong and often divergent values with respect to predators and predator/prey management. Those values are not subject to very much change, but there are ways to accommodate them if we work collaboratively to develop effective management systems.

Third, because of one and two, managing predator/prey systems is the most difficult job that wildlife managers face. In Montana, we recently had that challenge increased through both the natural recovery of wolf populations in northwest Montana and the reintroduction of wolves in Yellowstone and Idaho that are moving into parts of Montana. Managing these systems and working together is going to take time. As Jean said it's going to take a willingness on all our parts to listen and try to understand. Understand both the factual biology that we know and understand and appreciate each other's values and points of view. You don't necessarily have to accept someone else's values as your own, but I think we all need to respect everybody's opinion and their values as being legitimate.

In addition, managing predator/prey systems takes some faith. It takes faith on everybody's part because we're never going to know everything we need to know to make absolutely certain decisions. We're going to have to act and sometimes act rather boldly—whether that's reintroducing a predator to a system or taking some drastic action to reduce predation—in order to understand how the system works, evaluate it, learn, and move on.

I think this meeting provides an opportunity for all of us to begin working together to accomplish those two goals. We have an excellent panel of speakers here from agencies and the university, to provide information on what we know about a wide host of predators in Montana. We also have a number of distinguished members of the public here to represent some public views and raise some questions. This afternoon will provide an opportunity for all of you to join in the discussion. As Jean said, this is a great opportunity for us to learn from each other, develop some dialogue, and move forward. I look forward to hearing both from the panelists and from you today. Thank you.

Agenda Review: John Mundinger – Creative Solutions Consultant

My name is John Mundinger. I have been invited by Fish, Wildlife & Parks to be the moderator for today's meeting. Before I start talking about how the meeting is structured, I'd like to cover just a couple of basic points. The first one is that we have lunch scheduled for noon on the agenda. If you are going to participate in the lunch, and I would encourage you to do so because Doug Smith is our featured speaker for lunch, you need to get out and sign up by 9:30. We need to provide the hotel with a head count by that time.

Secondly, there will be published proceedings from this meeting. If you would like to receive a copy of the published proceedings, you need to sign up for that at the registration desk so that we have your name and address and know where to send the document. Related to the public proceedings, the only things that will get into the proceedings are either the printed material that the prepared speakers have brought with them or will be submitting to the department for

inclusion, or the information that you share by speaking directly into the microphone. We do have a recorder for the meeting, but for the recorder to pick up what you have to say, you have to speak into a microphone.

Third thing, as Chris Smith indicated we do have some congressional representation here today. I saw Senator Burns walk in the room. Senator Burns, would you stand up please? Thank you. And Senator Burns' staff, Mr. Mike Harris. I'm also told, although I didn't see him, Todd O'Hare with Representative Hill's office is also here.

As both Jean and Chris have indicated, the purpose of today's meeting really is information sharing. There are no agency decisions immediately pending, so you don't have to feel obliged to overly influence any particular action at the moment. I can't underscore enough the need to share information today. Jean talked about this as an opportunity to seek to understand, she encouraged you to make a commitment to learning. Today's meeting will be a success if each of us leaves today with one new understanding about predator management in Montana that we didn't have before. That understanding could be factual information and something you did not understand before. If you're going to do that it really requires two things. One, when it's your turn to speak, please speak in a manner that makes it easy for other people to understand where you're coming from. And if it's not your turn to speak, please listen in a manner that is focused on understanding where that other person is coming from. That's real communication.

The agenda is fairly structured this morning with a series of agency presentations that will be informational. This will be followed by a series of presentations from the public interest panelists, either bringing prepared remarks or responding to some of the things that they've heard spoken by the agency people. Following that will be a dialog between the two panels, and if there is insufficient dialog between the two panels, we will open the mikes before the lunch break for the audience specifically to ask questions. Not make statements, but ask questions, during any open mike that we have prior to lunch. Following lunch will be your opportunity to participate directly in the symposium. That can be additional questions posed to the panelists, or statements that you would like the panelists, the other people in the room, and the agencies to hear.

I will need some indication as to how many people will want to speak this afternoon because we will need to divide that time up equally. That will be closely monitored, how we manage our time throughout the meeting. I'm understanding that there may be a few people in the audience who would like more than a brief period of time to make a statement; and if there are some of those people present, I would encourage you to visit with me during one of the breaks so I have some kind of count. Before we actually start the open mic session, I'm going to leave it to the audience to decide how many people want to speak and whether or not we give certain individuals privileged time or whether everybody gets the same amount of time, so we have a common understanding as to how we share that time this afternoon. You will notice this morning, I intend to be very ruthless with our panelists in following the agenda. We've got a lot of items to cover and not much time to do it in so it means everybody needs to respect the clock.

I've been informed there's one other person whom I need to introduce in our audience. Lieutenant Governor Judy Martz came in, and I will embarrass her now and ask her to stand. Thank you.

Morning Session

Our first speaker this morning is Dan Pletscher, a professor on the wildlife biology faculty at the University of Montana. He has been there since 1984 and since about that time has been doing predator studies in the north fork of the Flathead with himself and some of his graduate students, and without further ado I will turn the mike over to Dan Pletscher.

Introductory remarks: So, John, when does my 50 minutes start? (Your 15 minutes started 45 minutes ago.) It's a pleasure to be here today. I would like to talk about some studies that we conducted up in the north fork of the Flathead, Glacier National Park and surrounding areas. We began these studies in 1990, continued them through about 1996, 1997 with funding from the Fish & Wildlife Service, the Forest Service, the Park Service, a lot of support from Fish, Wildlife & Parks.

Dan Pletscher Prepared Remarks

Predator-Prey Relationships in Northwestern Montana

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Most studies examining the impacts of large predators on prey populations in North America take place in relatively simple systems with one or few species of predator and one or few species of prey. For example, the widely-cited predator-prey study on Isle Royale National Park, Michigan (Mech 1966, McLaren and Peterson 1994), involves moose (*Alces alces*) and wolves (*Canis lupus*); in northern Minnesota, white-tailed deer (*Odocoileus virginianus*) and wolves (e.g. Mech and Karns 1977) with occasional moose; and in Alaska, caribou (*Rangifer tarandus*), moose, and wolves (e.g. Mech et al. 1995).

With the return of wolves to Glacier National Park in northwestern Montana via dispersal from Canada (Ream et al. 1991, Pletscher et al. 1991, Boyd et al. 1995), the complete compliment of large predators native to that area was present: wolves, coyotes (*Canis latrans*), grizzly bears (*Ursus arctos*), black bears (*U. americanus*), humans, and mountain lions (*Puma concolor*). Species diversity of ungulate prey was also high and included white-tailed deer, mule deer (*O. hemionus*), elk (*Cervus elaphus*), and moose, with bighorn sheep (*Ovis canadensis*) and mountain goats (*Oreamnos americanus*) at higher elevations.

Beginning in 1990, we examined cause-specific mortality in adult female white-tailed deer, elk, and moose in northwestern Montana and southeastern British Columbia within and near Glacier National Park to estimate the effects of predation on these species. Masters students Jon Rachael (1992, white-tailed deer), Mike Bureau (1992, elk), and Meg Langley (1993, moose) followed mortality for the first 2 years; Kyran Kunkel (1997) followed all 3 species during the last 4 years in completing his doctoral degree. I sincerely thank them for their dedication and hard work, and summarize their results here.

Methods

We captured white-tailed deer in Clover (1956) traps during the 1990-95 winters within Glacier National Park (GNP). Elk were captured in similar, but collapsible, traps within and along the western border of GNP. Moose were captured using a helicopter and either a net gun or darts filled with Carfentanil and Rompun. Deer and elk were generally handled with physical restraint only. Females of each species were fitted with motion-sensitive radio collars and released (the pulse rate of the transmitter would double from about 50 beats per minute to 100 beats per minute if the collar did not move for 4 hours or more). We attempted to maintain 30 females of each species with radio collars. Each winter, we would capture sufficient deer and elk to replace those animals that died during the previous year. Because moose had a higher survival rate, we captured moose approximately every other year.

Radio collared animals were monitored several times per week to detect mortality. When a mortality signal was heard, we followed a prescribed safety protocol (Rachael et al. 1992) prior to approaching the dead animal. We first used telemetry to listen for the presence of radio collared predators. If a radio collared grizzly bear was located at the same spot as the ungulate radio collar, we backed off until the grizzly left. The site surrounding the radio collar was carefully examined for clues to the cause of death. Predation was considered the cause of death if blood was present on the ground or if subcutaneous blood was found during a necropsy. Tracks, hair, method of killing, and kill site characteristics were used to estimate the cause of death following O'Gara (1978). We used the computer program MICROMORT (Heisey and Fuller 1985) to estimate survival rates for each species by year.

We estimated the recruitment rate as the number of fawns or calves per 100 females in late April or early May each year (the fawns/calves are then almost 1 year of age). For white-tailed deer, we classified animals along the North Fork Road shortly before sunset. Elk were generally classified in spring from a helicopter. Moose were classified by locating each radio collared female from a fixed-wing aircraft several times in April and estimating the ratio of young animals to adult radio collared animals. We estimated rate of change for each species by year (lambda) using these survival and recruitment rates (Kunkel and Pletscher 1999).

Results

A total of 67 female white-tailed deer, 55 female elk, and 49 female moose were radio collared during the course of the study. Young and old animals of each species generally had lower survival rates than prime-aged animals (Kunkel and Pletscher 1999). Cougars (33% of all mortalities) and wolves (24% of all mortalities) were the most common cause of mortalities

(n=42) in white-tailed deer; cougars (43%) and humans (21%) were the most common cause of mortalities (n=28) in elk; and grizzlies (24%) and wolves (24%) were the most common cause of mortalities (n=21) in moose (Table 1). The annual survival rate for white tailed varied from 0.62 to 0.84 during the 6 years of study (Table 2); the overall estimate was 0.74. The annual survival rate for elk varied from 0.64 to 0.89 (Table 2); the overall estimate was 0.83. The annual survival rate for moose varied from 0.81 to 0.97 (Table 2); the overall estimate was 0.88.

Recruitment rates also varied by year. For white-tailed deer, recruitment rates varied from 25 to 39 fawns/100 does; for elk, the rate varied from 12 to 41 calves/100 cows; for moose, the rate varied from 9 to 44 calves/100 cows (Table 2).

Annual survival rates were combined with annual recruitment rates to estimate the rate of growth of each population by year (Table 3). Values of lambda less than 1 indicate a declining population, values greater than 1 indicate an increasing population. The populations of white-tailed deer and elk declined during each year of the study. For moose, the rate of population change was positive through 1994, then negative during the last 2 years of study (Table 3).

Discussion

Survival of adults and recruitment of young into a population is a solid indicator of population change and can be used to determine which factor most influences population change. Kunkel (1997) and Kunkel and Pletscher (1999) reported several other methods of estimating population change (pellet group counts, counts from aircraft, hunter success) in this study; each of these population estimators provided results similar to those reported above.

Almost all mortalities we examined where we could determine the cause of death were due to predation. One white-tailed deer apparently died of pneumonia, and one moose apparently fell off a cliff while reaching for forage. Cougars were the primary cause of mortality for both white-tailed deer and elk, followed by wolves and humans in the case of white-tailed deer and humans and wolves in the case of elk.

Survival rates reported here for adults are only slightly lower than those reported for the same species in other areas. Recruitment rates, however, were considerably lower than necessary to maintain a constant population size. We did not have funding available to examine cause-specific mortality in fawns or calves, but believe such a study would provide important data necessary to understand and manage population change.

While prey populations declined during this study, wolf populations generally increased (Pletscher et al. 1997), then began to decrease. Mountain lions were killed by wolves (White and Boyd 1989, Boyd and Neale 1992), had kills taken away from them by grizzlies, and were found starved to death (T. Ruth, personal communication). Coyotes were killed by wolves and mountain lions, and generally occurred in lower numbers than prior to wolf re-establishment in GNP (Arjo 1998). These declines in predator numbers may allow prey numbers to increase in the next few years.

Management Implications

In areas where many species of predators compete for prey, managers should expect ungulate populations to decline, at least during certain times. Monitoring change in these ungulate populations should intensify where several different predator species co-exist so that rules and regulations can be quickly changed to respond. Wolves and grizzly bears are currently listed as endangered species in Montana, though that could change fairly quickly for wolves if population targets are met (and also for grizzlies, see Servheen paper in this volume). The population target for wolves is a minimum of10 breeding pairs in each of 3 areas (northwestern Montana, the Greater Yellowstone Ecosystem, and Central Idaho) for 3 successive years. All but northwestern Montana have met this goal; anyone knowing of additional wolf packs in northwestern Montana should contact Joe Fontaine, U.S. Fish and Wildlife Service in Helena (406-449-5225), with information on their location. This could hasten the first year northwestern Montana reaches the recovery goal, and therefore hasten the delisting of wolves.

When population declines are detected, managers can respond by lengthening seasons or expanding bag limits on some species of predators (those that are not protected by ESA) and/or by reducing predation by humans (i.e. shortening the hunting seasons or reducing the number of antlerless permits).

Recovery of predators is widely supported by the American public; wolves, mountain lions, and grizzly bears are not likely to go away any time soon. It is difficult for hunters to argue against predators because hunters are predators, too. The best strategy for hunters may be to support programs that bring money to the states from the broader American public that is concerned about predators and other species, and the bipartisan Conservation and Reinvestment Act is the best solution currently on the horizon. This bill would bring about $6M dollars to the Montana Department of Fish, Wildlife and Parks for work on all species.

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Table 1. Cause-specific mortalities of female white-tailed deer, elk, and moose within and near Glacier National Park, Montana, from January 1990 through June 1996. Values given are the number of animals of that species killed by the given predator; values in parentheses are the proportion of all mortalities of that prey species killed by that predator.

Source	White-tailed Deer	Elk	Moose
Mountain Lion	14 (33%)	12 (43%)	
Wolf	10 (24%)	3 (11%)	5 (24%)
Human	5 (12%)	6 (21%)	3 (14%)
Grizzly Bear		3 (11%)	5 (24%)
Black Bear			
Bear	4 (10%)		2 (10%)
Coyote	2 (5%)		
Bear-wolf		3 (11%)	1 (5%)
Unknown	3 (7%)	1 (4%)	2 (10%)
Wolf/Mountain lion	1 (2%)		
Unknown Predator	2 (5%)		1 (5%)
Disease/Accident	1 (2%)		2 (10%)

Table 2. Survival and recruitment rates for white-tailed deer, elk, and moose within and near Glacier National Park, Montana, from January 1990 through June 1996. Data adapted from Kunkel and Pletscher (1999); for confidence intervals, see that publication. Survival rates are probabilities of surviving one year; recruitment rates are fawns (or calves):doe (cow).

Year	Deer Survival	Deer Recruitment	Elk Survival	Elk Recruitment	Moose Survival	Moose Recruitment
1990		0.39				
1991	0.62	0.34	0.64	0.41	0.88	0.25
1992	0.84	0.33	0.88	0.16	0.97	0.22
1993	0.76	0.25	0.89	0.12	0.85	0.44
1994	0.71	0.25	0.82	0.14	0.90	0.30
1995	0.72	0.32	0.89	0.16	0.84	0.10
1996	0.80	0.30	0.84	0.13	0.81	0.09

Table 3. Point estimates of population trend for white-tailed deer, elk, and moose within and near Glacier National Park, Montana, from January 1990 through June 1996. Values given are lambdas; these are equivalent to the population in one year divided by the population in the

following year. Values less than one indicate a declining population, while values greater than one indicate an increasing population.

Year	White-tailed Deer	Elk	Moose
1991	0.75	0.77	0.99
1992	0.98	0.97	1.07
1993	0.84	0.94	1.04
1994	0.80	0.88	1.03
1995	0.82	0.96	0.89
1996	0.92	0.90	0.85

Concluding remarks: I brought along a number of publications from our project and I'll leave a sheet of paper up here; if anybody wants some of these, you're more than welcome to them. Just sign your name, put your name and address, zip code and we'll get them off to you.

John Mundinger: Thank you, Dan, for a stimulating presentation and also for following the guidance of your moderator. Our next panelist is Jay Newell. Jay is a wildlife biologist with Montana Fish, Wildlife & Parks stationed in Roundup. He holds a Masters Degree from Montana State University. He's been in Roundup since 1988, and he's been working with coyotes and antelope and mule deer.

Introductory remarks: When they told us that we had 15 minutes, I really didn't believe them so we'll test the moderator. Montana Department of Fish, Wildlife & Parks contributes about $110,000 annually to the Montana Department of Livestock for predator control. The Department of Livestock gives that money to Wildlife Services and they do predator control, aerial coyote control in certain areas where landowners have requested assistance.

Jay Newell Prepared Remarks

The Effects of Coyote Removal on Populations of Antelope and Deer in Hunting District 530

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INTRODUCTION

Currently Montana Department of Fish, Wildlife, and Parks (MFWP) contributes $110,000 annually to the Montana Department of Livestock (MDOL) for the control of predators. MDOL contracts with Wildlife Services (WS), APHIS, to conduct aerial coyote control in certain areas where

landowners have requested assistance. MFWPs' contribution is 7% of the total predator control program and wildlife benefits are assumed to be commensurate with that portion. In 1997 (MFWP) and Wildlife Services (WS) implemented a coyote control program in antelope hunting district 530 with the following objectives: 1. to measure the relationship between coyote control and changes in populations of game animals, 2. to measure the cost-effectiveness of coyote control in a large hunting district and 3. to determine whether or not directing funds for predator control at specific hunting districts would be more beneficial to game populations than our current practice of allowing the MDOL to direct funds. A total of $30,000 per year was set aside specifically for aerial gunning of coyotes in hunting district 530. All these funds were for aircraft rental and travel expenses of the pilots. Additional funds were set aside to increase MFWPs' survey budget so that antelope could be surveyed annually in 2 hunting districts instead of once every four years, to increase the level of survey intensity on mule deer and to collect biological data on coyotes.

WS was responsible for coyote hunting, with most animals gunned from aircraft, although some coyotes were trapped with snares, called or killed with M44s. MFWP personnel were responsible for monitoring responses of game populations to coyote removal and evaluating the economic benefits. Coyote control was first implemented in March, 1997 and ended June 30, 1999. Additional data on mule deer will be collected in March of 2000 and a final report will be completed by July of 2000.

STUDY AREA

Intensive control of coyotes took place in hunting district (HD) 530 while HD 513 and the Yellow Water Triangle (YWT) portion of HD 420 had no additional coyote control (Fig. 1). Hunting district 530 will be referred to as the treatment while the other two hunting districts will be referred to as the comparison areas. Data on antelope, mule deer and rabbits was collected in all three hunting districts.

The YWT is a portion of HD 420 and encompasses approximately 280 sq. mi. while HD 513 and 530 encompass 1015 and 1034 sq. mi. respectively.

Hunting district 530 had the greatest percentage (77%) of private land while the YWT had the lowest percentage (70.1%) of private land. Major activities in all three areas include farming and ranching with both sheep and cattle as primary animals in ranching operations.

RESULTS AND DISCUSSION

COYOTES

Between March 18 of 1997 and July 1 of 1999 there were a total of 310 coyotes killed in the project area of which 285 were gunned aerially with project funds (Table 1). WS spent a total of 85.5 hours flying in a cub and killed 68 coyotes for a cost of $104.03 per coyote and 1.3 hour flown per coyote killed. WS spent a total of 209.4 hours flying in a helicopter and killed 217 coyotes for a cost of 293.83 per coyote and .97 hours flown for each coyote killed. In addition there were 25 coyotes

killed in response to depredation calls received from landowners and in areas with chronic problems. No costs were associated with these control actions.

Kill distribution was fair through the hunting district and was influenced by distribution of coyotes, distribution of landowners within the hunting district who refused to allow us to aerially gun coyotes and visibility of coyotes in various habitat types. Of 75 landowners or land managers contacted in hunting district 530, nine refused to allow WS to aerially gun coyotes. These 9 landowners owned approximately 106 square miles or 10.2% of the hunting district. Few coyotes were killed in the ponderosa pine habitats because of the poorer visibility and difficulty of hunting in this habitat type (Fig. 2)

Siren routes were established within each of the hunting districts to monitor relative densities of coyotes (Fig. 3). These routes were completed between 11:00 p.m. and 5:00 a.m. on clear calm nights. A siren was blown at established stations along the route and numbers of responding coyotes were recorded. Data collected on siren survey routes was highly variable with the number of coyotes responding on any given night influenced by weather conditions. Over the three years of the study HD 530 had a much lower response rates than the comparison areas with less than 1 coyote responding per station. HD 513 had a response rate of 1.9 coyotes per station while the YWT had the highest response rate of 3.5 coyotes per station over the three year period.

As another indicator of coyote abundance we kept track of the number of coyotes observed per hour of antelope survey in hunting districts 513 and 530 (Fig. 4). In HD 513 we observed 105 coyotes or 1.4 per hour of flight , while in HD 530 we observed 45 coyotes or .52 coyotes per hour of flight over the three years of the study.

Both the siren route results and the number of coyotes observed per hour of flight indicated that the population of coyotes in the treatment area was lower than in the comparison areas. In addition, the siren route and flight data indicated that the number of coyotes in HD 530 declined over the three years of the project. Although we have no data on the relative number of coyotes existing in each hunting district prior to the beginning of the project it is likely that HD 530 had a much lower population than the other two hunting districts. This low starting population of coyotes was due to the fact that there are a large number of sheep ranchers in the treatment area and there are two ranchers who aerially gun coyotes in the treatment area.

ANTELOPE

Fawn: doe ratios in HD 530 were higher than fawn:doe ratios in the comparison districts in all three years. Hunting district 530 had the highest fawn:doe ratio in 1999 it has had since prior to 1978 (Fig. 5). Two other important observations made when analyzing this data were 1. Fawn:doe ratios increased in all three hunting districts over the three years of the study and 2. Fawn:doe ratios have traditionally been higher in HD 530 than in the comparison areas as confirmed by the average fawn:doe ratios for the period 1983-1987. In fact, fawn:doe ratios were 12% and 43% higher in hunting district 530 than in hunting district 513 and 420, respectively, for the period 1983-87.

Populations of antelope increased in all three areas over the three year period. HD 530 showed the

most significant increase (45.3%) going from 4407 antelope in 1997 to 6403 antelope in 1999 (Fig. 6). The comparison areas increased at a lower rate, with HD 513 increasing from 4056 to 4234 (4.4%) antelope and the YWT increasing from 553 to 671 (21.3%) antelope.

The rapid increase in antelope populations in HD 530 was the result of a very high fawn survival. This enhanced survival of fawns was due at least in part to the decrease in coyote abundance as measured by our siren routes and observations of coyotes during antelope surveys. Predation of pronghorn fawns by coyotes has been documented in many studies (Bodie 1966, Beale and Smith 1973, Von Gunten 1975, Schladweiler 1980 and Byers 1997) Increased pronghorn fawn survival as a result of coyote removal has also been documented in other studies (Smith et. Al. 1986, Willis et. al. 1993). Another factor which influenced populations in each hunting district and may explain in part the observed 21% increase in the YWT and the minimal increase in 513 was differing levels of hunting pressure. Hunting district 513 had the smallest increase in population and the greatest hunting pressure. In 1998 we issued 1 permit per 4.2 antelope in HD 513 , 1 permit for every 5.3 antelope in 530 and 1 permit for every 30 antelope in 420 (estimated that the count in the YWT represented 44.3% of hunting district total count).

Other factors besides predation and hunting which are known to influence fawn:doe ratios and populations and were not measured in this study were differences in habitat quality and land use. The higher quality habitat and land use practices, explain in part, the fact that HD 530 has traditionally had a fawn:doe ratio that averages 12% higher than 513 and 43% higher than 420.

Even though the population of antelope increased by 45% in hunting district 530 we only increased the number of permits issued by 17% over the three-year period. The reason we allowed this minor increase was that hunters were unable to gain access to many of the areas with the highest density of antelope. In hunting district 513 there was no increase in the number of permits issued while in HD 420 permits were increased from 50 to 200 or a 300% increase.

MULE DEER

Fawn recruitment rates of mule deer in 1997 were the lowest they had been since 1985-86 in most hunting districts in Region 5 and for that matter most hunting districts around the state (Fig. 7). Fawn recruitment rates increased in 1998 but still remained well below the level observed in most other years. In all three hunting districts the highest recruitment rate observed was in the spring of 1999 and HD 530 had the highest recruitment rate of all three areas in all three years.

In HD 530 we fly a mule deer trend area each year in the spring of the year. The population in the trend area peaked in 1992 at 394 deer, declined to 162 in 1997 and showed another slight decrease in 1998 to 155. The number of deer observed in the trend area in 1998 (the second year of coyote removal) was the lowest it has ever been since we first started flying this trend area in 1986 (Fig. 8). In the spring of 1999 we observed 241 mule deer in this trend area an increase of 49% over the 1997 count. We were not allowed to hunt a portion of the trend area but 13 coyotes were removed from the trend area during the 3 years of coyote control.

Data on mule deer although less conclusive than the antelope data suggested that coyote control positively influenced population recovery. Fawn:adult ratios in the treatment area were slightly

higher in all three years of the study than ratios in the comparison districts and the population of mule deer in the trend area increased by 49% between 1997 and 1999. During the same time period that coyote control was taking place in hunting district 530 the department and WS were also doing coyote control in the Cottonwood Creek Area in North Phillips County. Biologists in Malta were comparing data on mule deer fawn survival in the treatment area with an area in the Saco Hills where no additional coyote control was taking place. To date the coyote control in the Cottonwood creek area has had only a minor positive affect on the mule deer population and fawn survival (Mark Sullivan personal communication.). Sizes of treatment and comparison areas in the Malta area were under 100 square miles.

As with antelope, coyotes have been shown to influence mule deer fawn survival. In Montana, Hamlin et.al. (1984) found that coyote predation was the primary factor causing summer fawn mortality in the Missouri Breaks. In more recent years researchers in the Bridger Mountains studied winter fawn survival between 1989 and 1994. During that time period 211 mule deer fawns were radio-collared and 114 or 54% died. Predators killed 68% of the 114 fawns which died. Predation in the Bridgers accounted for between 62% and 86% annually of all the fawn mortality with a majority of the fawn predation attributed to coyotes (Unsworth et.al. 1999). Idaho researchers attributed between 1 and 100% of their annual fawn mortality to predation but mortality rates were lower than Montana. In the Idaho study 128 fawns died or 46% and predation accounted for 41% of that mortality. Colorado during the period 1981 to 1995 had a total of 1385 fawns radio collared. Total mortalities were 771 fawns or 55.6% and predators were implicated in 42% of the total deaths. Predation in Colorado also varied by year from 0 to 83% of the total mortality observed (Unsworth et.al.1999) Major predators in both Idaho and Colorado were coyotes and lions. In most cases though, researchers indicated that impacts to the population from other causes such as drought, disease, hunting, winter weather conditions or livestock grazing, played a more important role than predation in influencing long-term population trends. In all of these studies two things become apparent. Fawns had a mortality rate which fluctuated greatly from year to year and predation as the causative action varied in intensity depending on environmental conditions.

RABBITS

Another important factor affecting predation rates on both antelope and mule deer fawns is the availability and abundance of alternate prey species. This factor has been shown to be important in other studies where alternate prey species such as small mammals become a more important part of a coyote's diet as populations of the alternate prey species increased (Hamlin 1984). In this study it was apparent that rabbit populations were on the increase in all three years. The number of rabbits increased in all three hunting districts irregardless of the number of coyotes recorded at stations along siren routes. Over the three year period the number of rabbits observed in the comparison hunting districts increased by 276% while in the treatment area rabbit numbers increased by 192%.

Hamlin et.al. (1984) showed that fawn mortality of mule deer was lowest when coyote populations were highest and alternate prey species populations were high. The rapid increase in rabbit numbers observed in this area may explain in part the observed increase in fawn:doe ratios in all three areas in 1999 as coyotes switched to the more abundant prey species of rabbits. The role small mammals play in taking coyote predation pressure off of big game fawns and the response of small

mammal populations to decreased predation pressures is probably one of the least well understood predator-prey relationships. Recent studies in western Texas (Heinke and Bryant 1999) suggested that coyotes play a keystone role in population regulation of small mammals and some other predators. Their study compared two areas with coyote control to two areas without control. Rodent diversity and richness declined on areas where coyotes were removed. They also found that rodent biomass and density, jackrabbit density and relative abundance of badgers, bobcats, and gray fox all increased in the treatment sites. In our study both the treatment and comparison areas showed a marked increase in rabbits over the three year period of the study. Since this increase took place both on and off the treatment area reduction of coyote numbers could not explain the significant increase in rabbits. Unfortunately, no measurements were taken on some of the other abundant small mammals in the area. Another factor which would influence predation rates on fawns and was not measured in this study was the abundance of other known fawn predators such as golden eagles and bobcats and the influence of coyote reduction on these populations. It has been shown in other studies that bobcat populations increase following reduction in coyotes (Heinke and Bryant 1999).

MANAGEMENT IMPLICATIONS

Connoly in 1978 reviewed 58 studies of predation on wild ungulate populations and found that roughly 53% indicated that predation controlled or limited the size of ungulate populations and 47% indicated that predators did not limit population size. We know that coyotes do predate both antelope and mule deer fawns. In some years this predation level may have a negative affect on populations. Over the long term it is unlikely that predators control populations but may cause temporary declines and maintain populations at a lower level than desired for longer than desired periods. The purpose of this study was to measure the effectiveness of predator control in a large hunting district. My conclusions are that predator control during the spring of the year prior to the time females drop fawns did have a positive influence on populations of antelope and to a lesser extent mule deer. If our department is going to continue to allocate funds to the Department of Livestock for predator control it would be to our benefit to direct those funds at hunting districts where populations of game animals are well below the desired level, fawn:doe ratios are low, hunters are able to gain access to the increased surplus of animals, habitat will support more game and predator control is acceptable and economical. In addition, we need to adopt a policy for making decisions on whether or not to proceed with predator control based on objectives similar to the objectives presented by Connolly in 1978 and decide when predator control should be reduced or eliminated prior to undertaking a control project (Fig. 9).

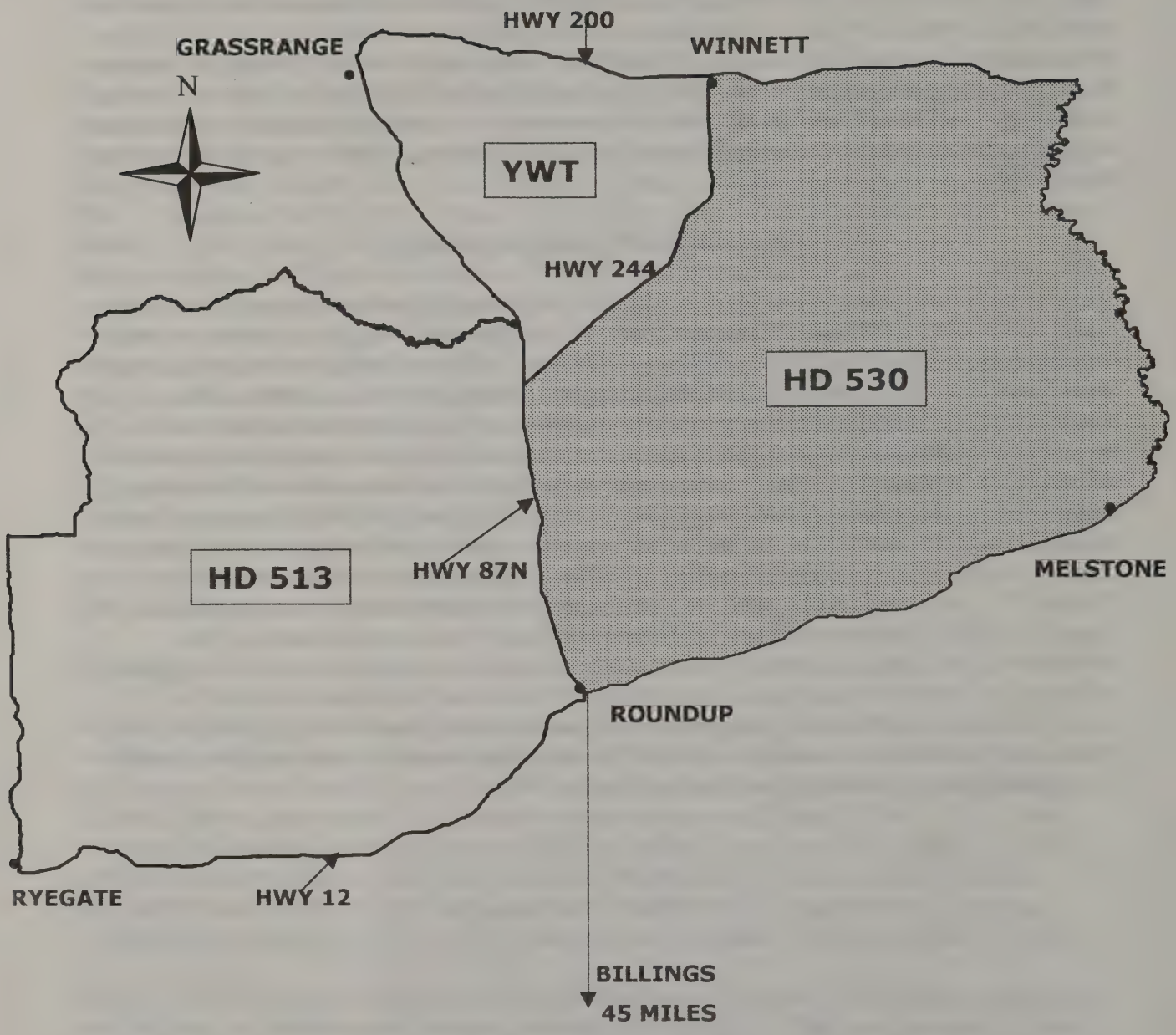

Figure 1. Study area for coyote control project, 1997-1999.

SUPER CUB 1997-99

HOURS	COST	COYOTES	COST/COYOTE
85.5	$7,074.00	68	$104.03

HELICOPTER 1997-99

HOURS	COST	COYOTES	COST/COYOTE
209.4	$63,761.00	217	$293.83

OTHER 1997-99

HOURS	COST	COYOTES	COST/COYOTE
NA	NONE	25	$0.00

Table 1. Costs of coyote control in hunting district 530, 1997-1999.

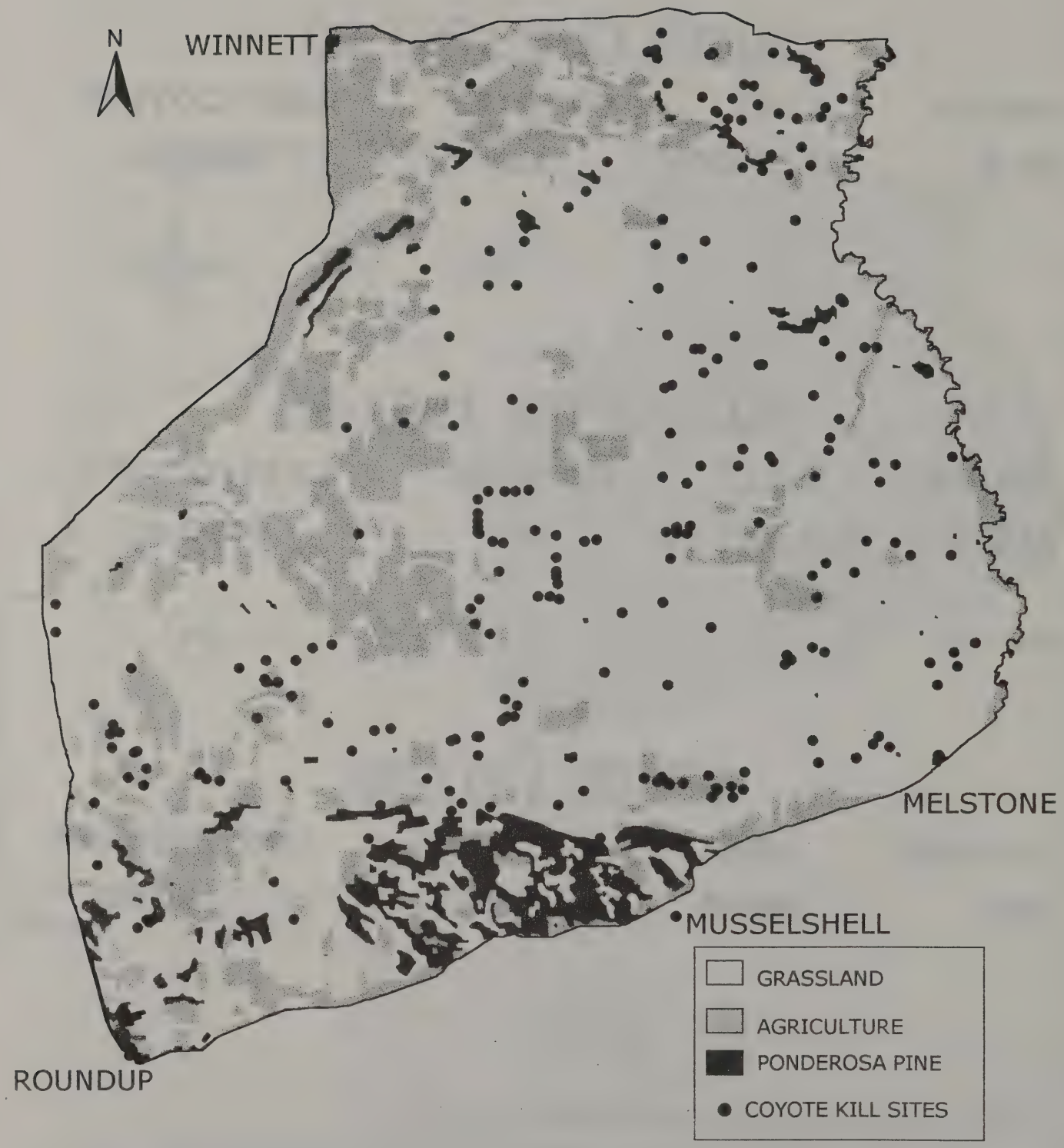

Figure 2. Kill distribution of coyotes in hunting district 530, 1997-1999.

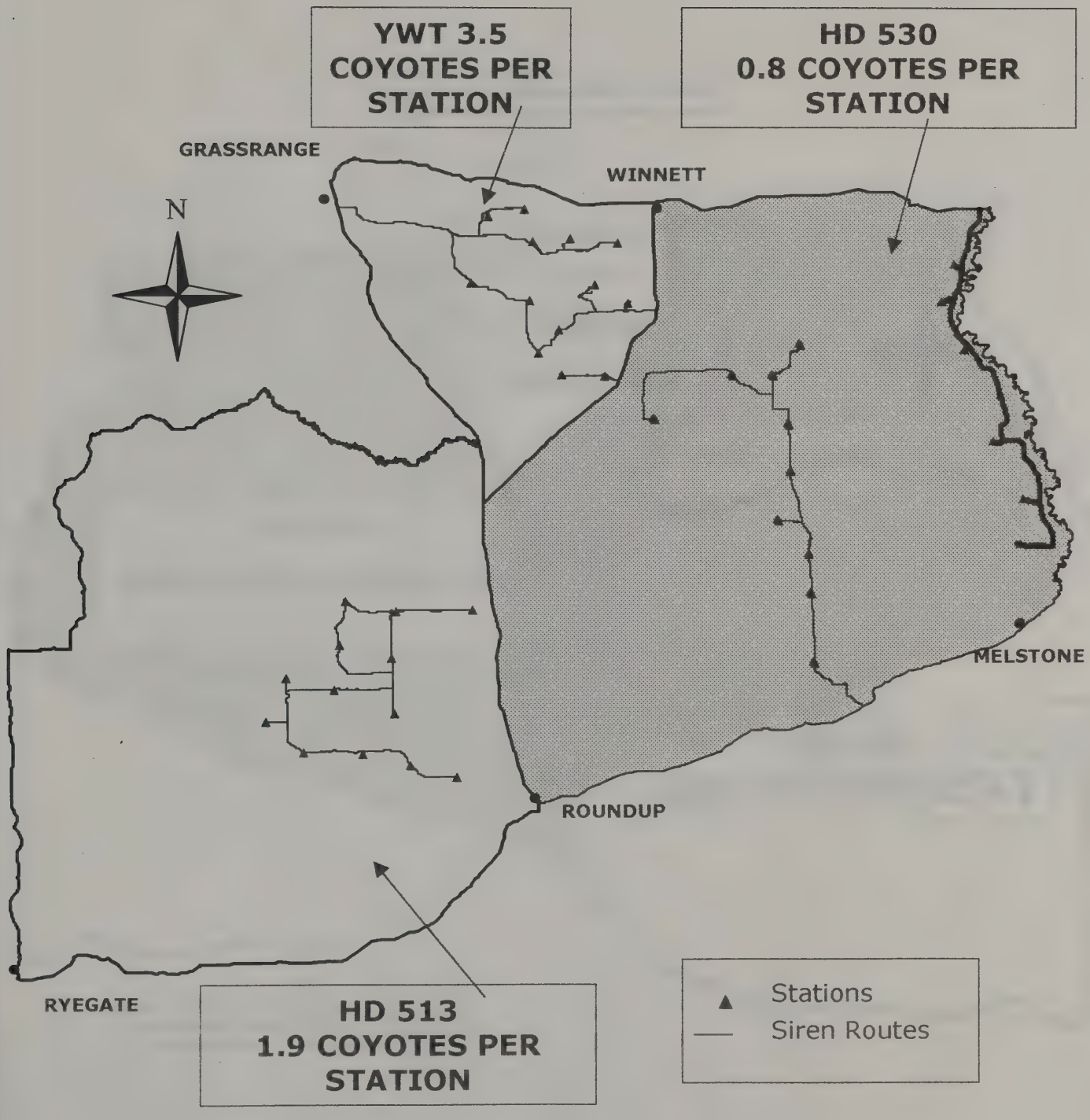

Figure 3. Siren Routes and number of coyotes responding at stations 1977-1999, combined.

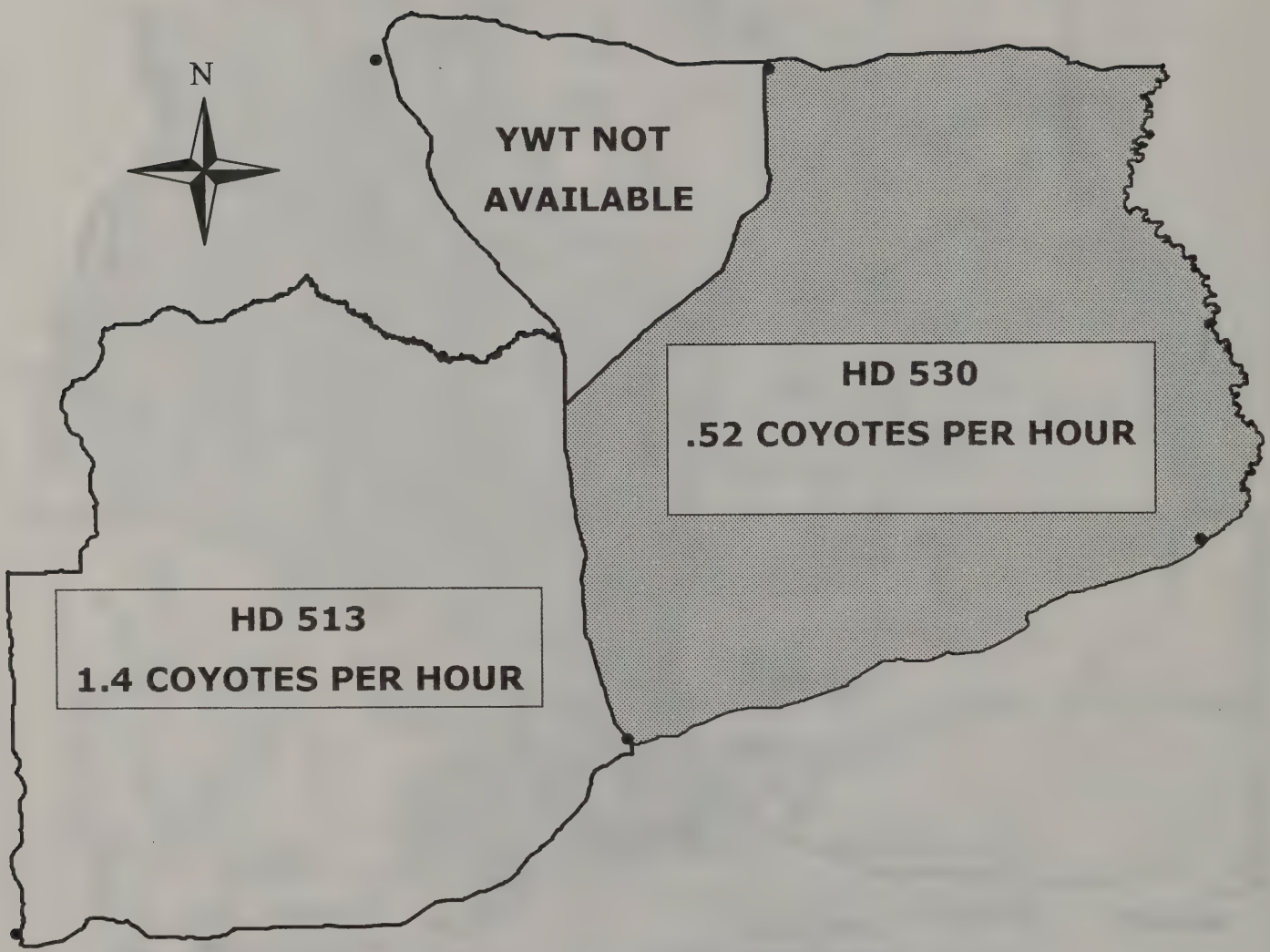

Figure 4. Number of coyotes seen per hour of antelope survey, 1997-1999.

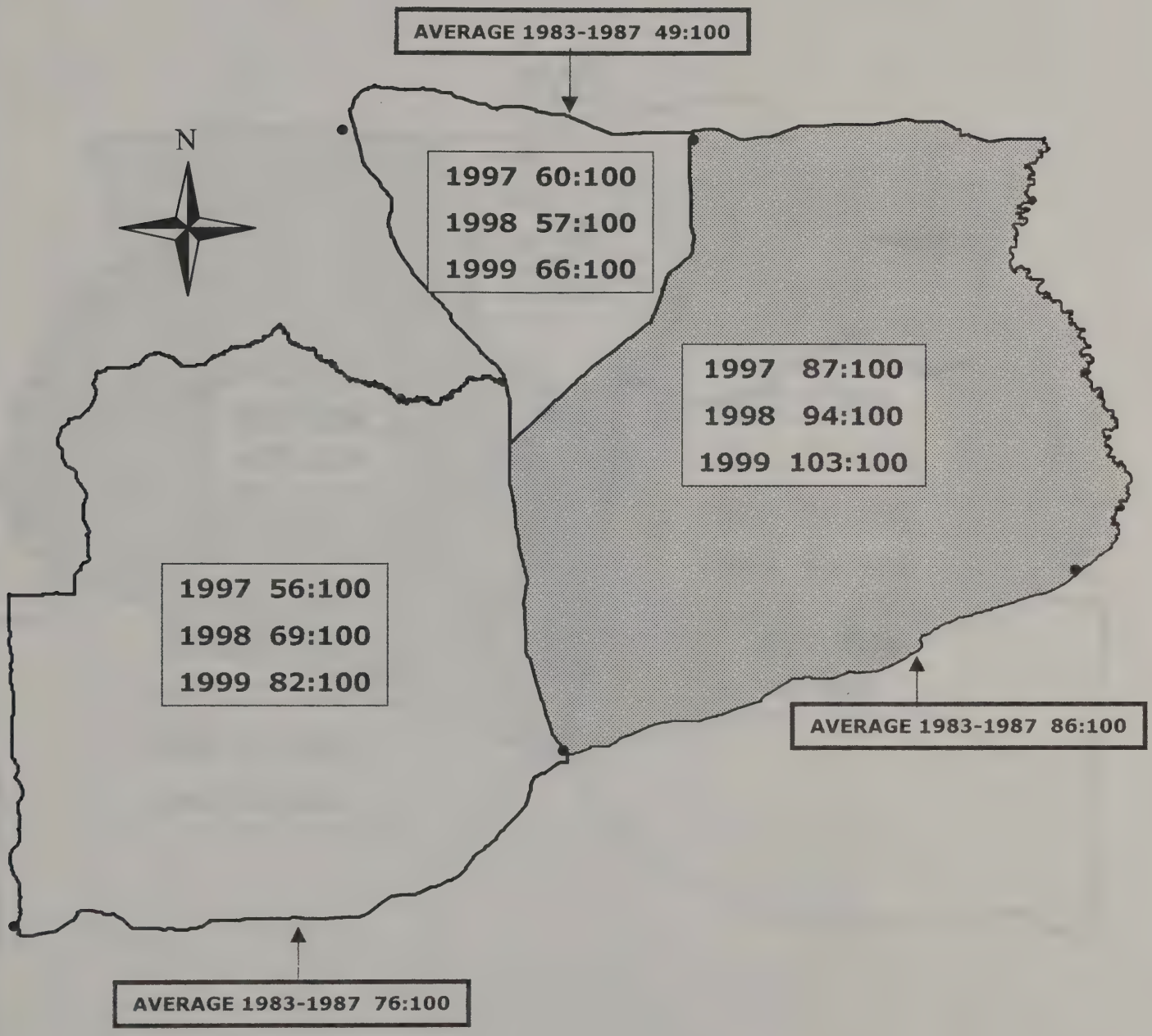

Figure 5. Number of antelope fawns:100 does observed 1997-1999.

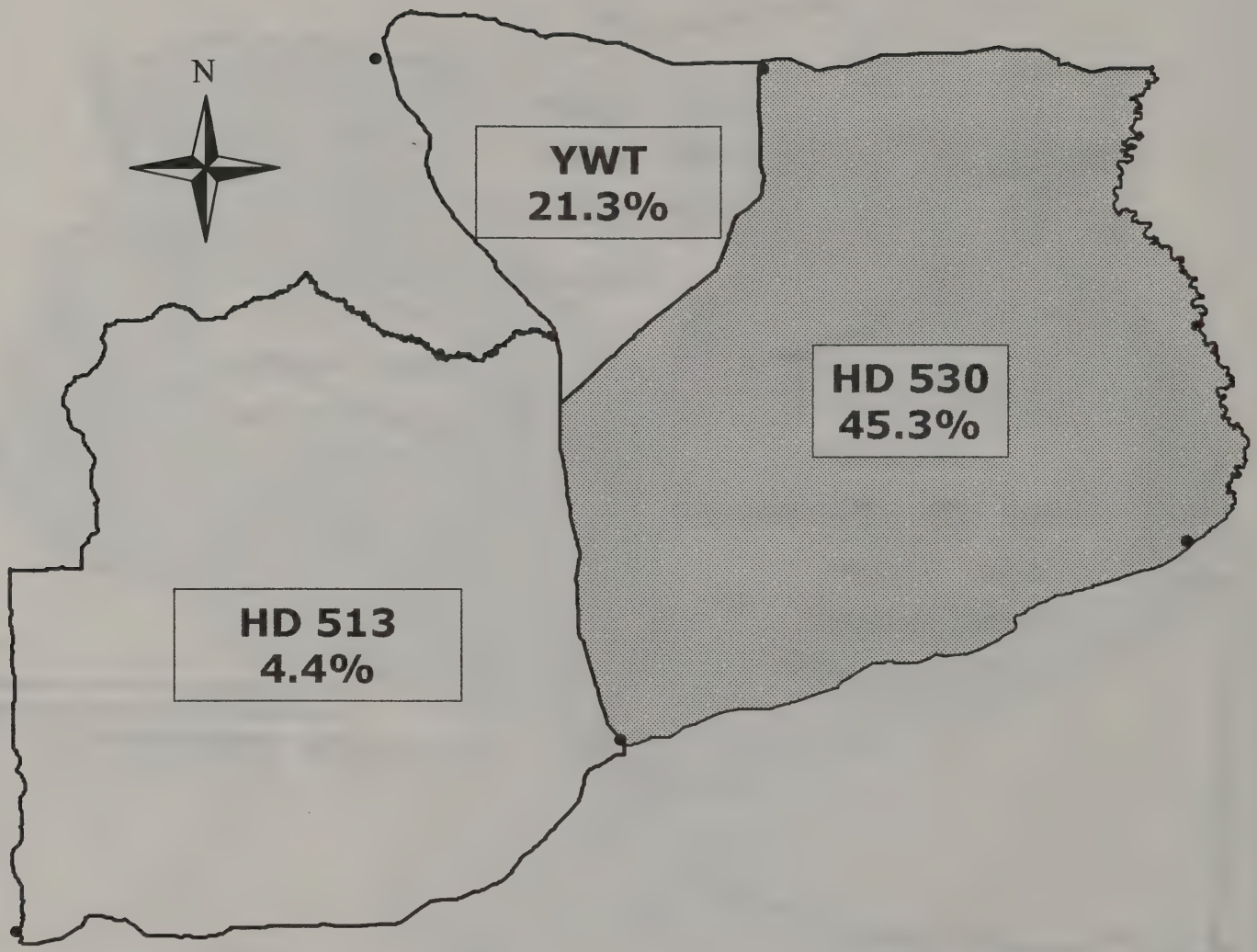

Figure 6. Percent increase in antelope populations between 1997 and 1999.

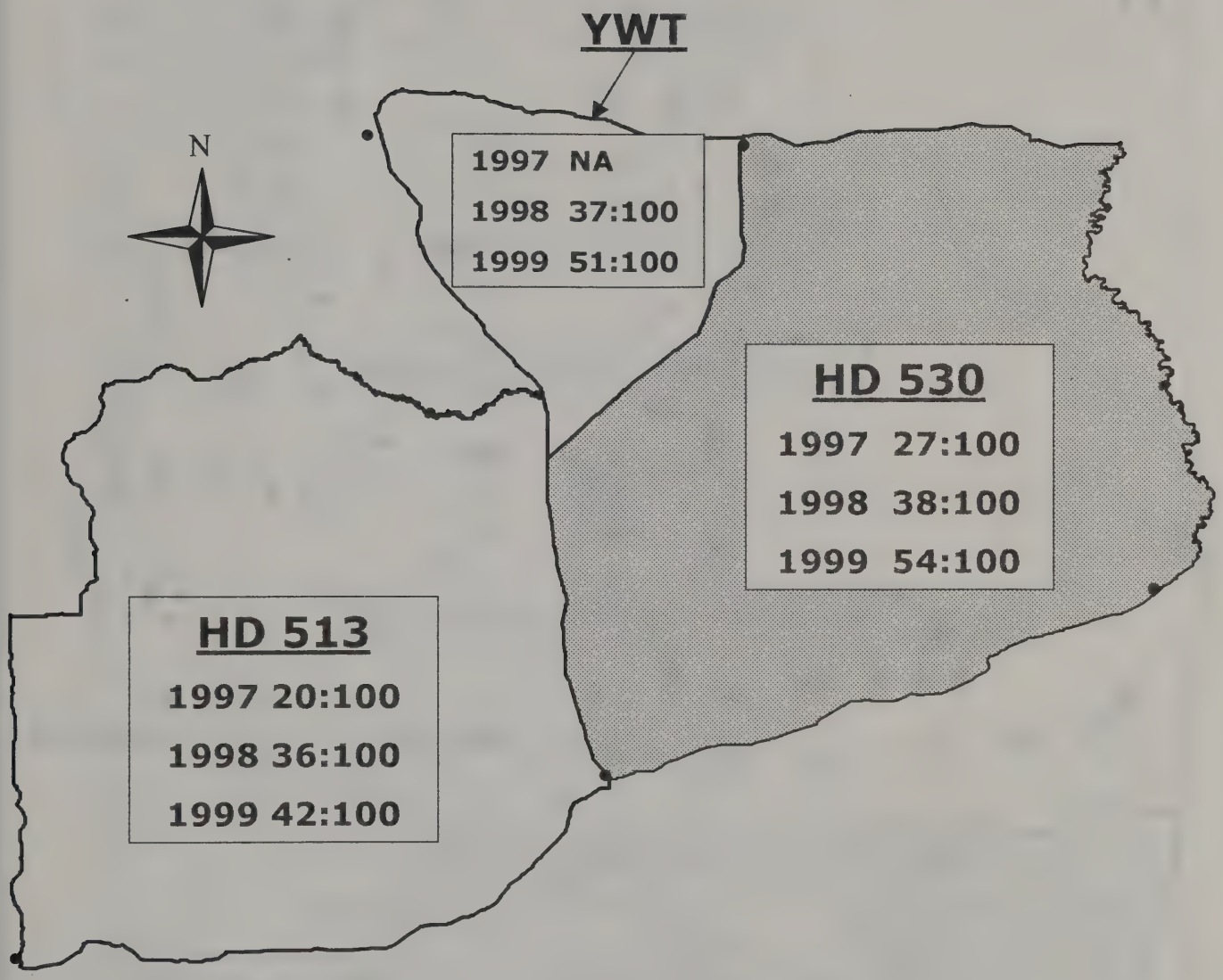

Figure 7. Number of mule deer fawns per 100 adults observed in study area 1997-1999.

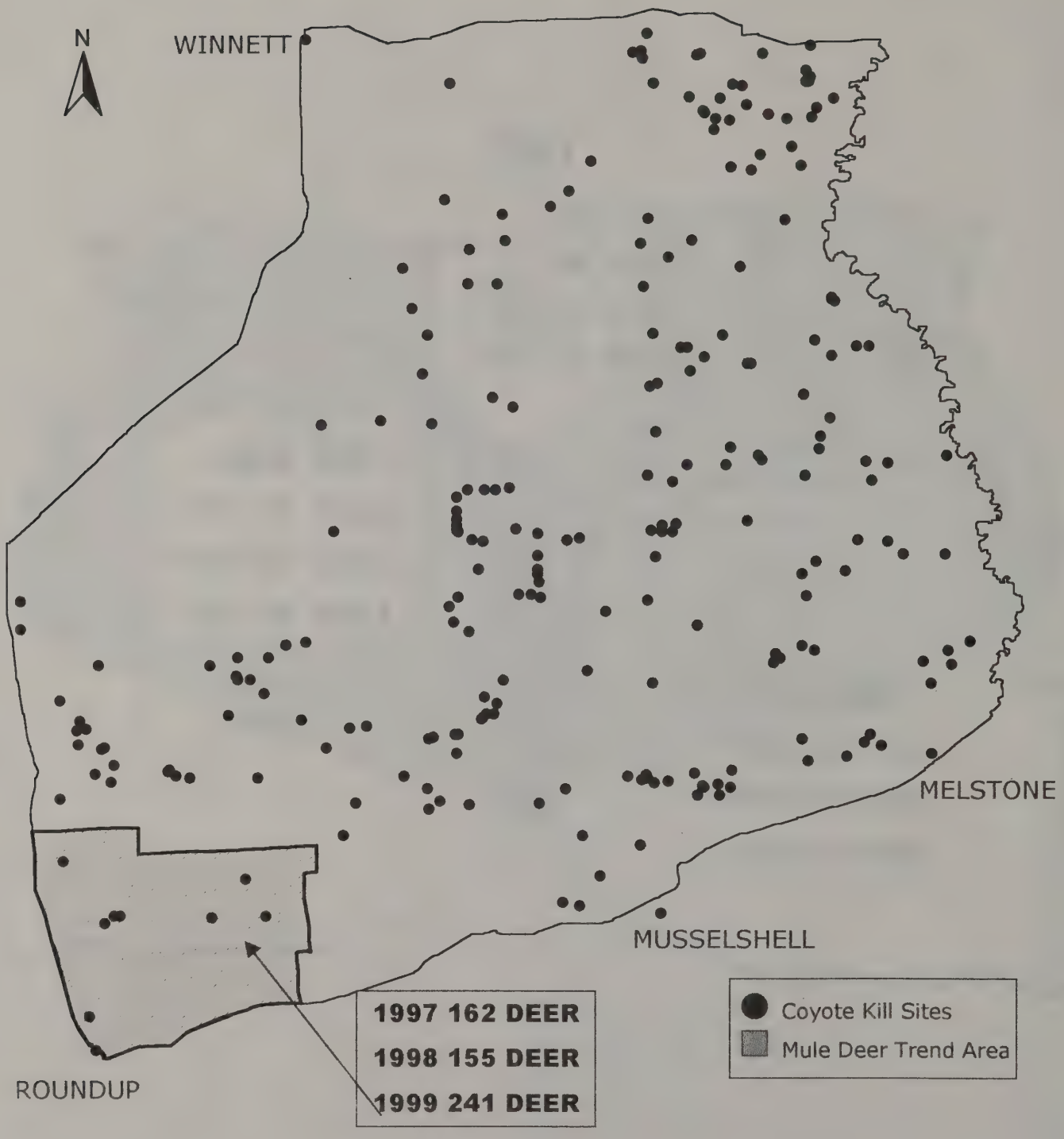

Figure 8. Number of mule deer observed in trend area and coyote kill locations, 1997-1999.

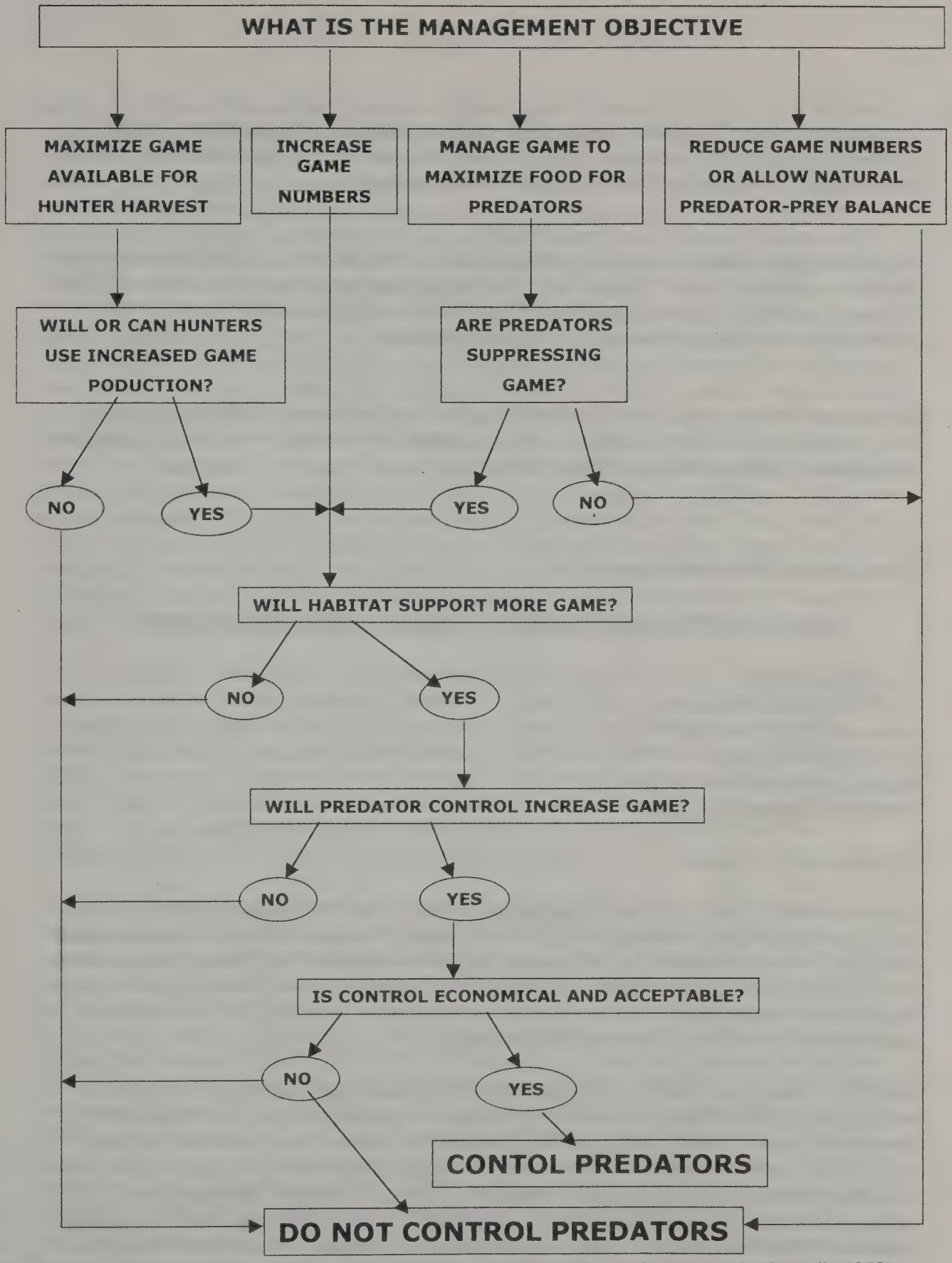

Figure 9. Decision tree that can used to base decisions on the need for predator control (Connolly 1978).

Concluding remarks: We need to adopt a policy for making decisions on whether or not to proceed with predator control based on objectives similar to this slide and decide when predator control should be reduced or eliminated prior to taking a project on.

John Mundinger: Thank you, Jay. Our next speaker is Chris Servheen. Chris is the grizzly bear coordinator with the Fish and Wildlife Service located in Missoula, Montana. He holds a Ph.D. in Forestry and Wildlife Management from the university and is responsible for coordinating grizzly bear research and management in the lower 48 states.

Introductory remarks: Well, I don't have any slides, so you don't have to worry about going to sleep for a little while. You're going to have to stay awake for a few moments here. I'll give you a brief situation statement on the grizzly bear here.

Chris Servheen Prepared Remarks

THE GRIZZLY BEAR IN THE LOWER 48 UNITED STATES

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1. Status and Distribution

The distribution of the grizzly bear (Ursus arctos horribilis) began to change in response to excessive human-caused mortality and habitat loss in the early 1800s. The settlers who occupied the American west considered the grizzly a predator and a competitor of humans. As such it was shot, poisoned, and killed wherever it was found. It is estimated that there were approximately 50,000 grizzly bears south of Canada in 1800 (USFWS 1993). By 1975, this number had been reduced to 7-800 in less than 2% of the former range.

Grizzly bears occupied a variety of habitats prior to their attempted extermination. Grizzlies were found across the Great Plains east of the Rocky Mountains where they were dependent upon the millions of bison (Bison bison) that inhabited the prairies. Early accounts (DeVoto 1953) remark on the abundance of grizzly bears along the Missouri River in present-day Montana. These bears were apparently attracted to the river by hundreds of drowned bison carcasses and the rich foods along the prairie rivers such as berry-producing shrubs. The bison carcasses resulted from mass drowning when hundreds of thousands of bison crossed the rivers. The grizzly was also distributed across the Rocky Mountains from northern areas in Montana

and Idaho (Moore 1996) south to Arizona and New Mexico (Brown 1985). Grizzly bears were probably more abundant in California than any other state (Storer and Tevis 1955). Grizzly bears fed on salmon in California rivers, on beached whales along the coast and one the abundant mast crops of California oaks. Grizzly bears were so much a part of California that the grizzly was placed on the state flag, the only state to do so. Nevertheless, grizzly bears were shot, poisoned and trapped in California, as is the rest of the western United States. The last wild grizzly bear in California was killed in 1922, leaving the only grizzly bear remaining in California the symbolic bear on the state flag.

By the 1920s and 1930s grizzly bears were being driven to extinction throughout much of their former range, only 100 years after the arrival of European settlers. At this time, domestic sheep were a large agricultural interest spread far into the mountains in the last refuges of grizzly bears. Places that are now wilderness such as areas of the Bob Marshall and Scapegoat Wilderness in Montana and the Selway-Bitterroot Wilderness in Idaho were filled with herds of domestic sheep. The maintenance of domestic sheep in areas with grizzly bears and wolves (Canis lupus) required predator control techniques such as trapping and poisoning. The 1920s and 1930s saw the lowest numbers of grizzly bears surviving south of Canada. In portions of the present-day Sun River Game preserve in Montana, a place now rich in grizzly bears, an entire summer of searching for bear tracks only turned up one or two. Hunting and killing of bears for protection of livestock continued into the 1970s and the only refuge for grizzlies were the two National Parks, Yellowstone Park in Wyoming, Montana, and Idaho, and Glacier Park in Montana.

In 1975 the grizzly was declared a threatened species in the lower 48 United States and came under the protection of the Endangered Species Act. This listing brought attention to the habitat and population management needs of this species. Research was initiated in areas outside National Parks; actions that could impact habitat such as timber harvest and road building were modified to minimize impacts on grizzly bears. Sanitation was improved in both front country areas around towns and campgrounds, as well as backcountry areas in wilderness and National Parks. The long-standing National Park Service policy of feeding garbage to bears was eliminated in both Glacier and Yellowstone National Parks.

Progress has been made in improving the status of grizzlies in many areas of their range, however many challenges still exist. Among these are private land developments in bear seasonal range, continuing conflicts with bears in areas of human development, and the need to increase the small populations in certain areas. The focus of threatened status for grizzly bears has resulted in the development of an interagency committee of land management and game management agencies from State, Federal, Tribal, and Canadian agencies which implements the Grizzly Bear Recovery Plan (USFWS 1993). The Recovery Plan is the document that outlines all the necessary tasks to achieve recovery demographic and habitat recovery for grizzly bears in the lower 48 United States, and to build public support for bears. The status of the grizzly bear in 1999 is much better than it was in 1975 when the species was listed as threatened. This change has been due to a concerted effort not only by the management agencies but also by the public who have changed the way they use bear habitat due to a general public realization that grizzly bears need special care if they are to survive. This highlights the importance of the public in the conservation and recovery of the grizzly bear. Public support and understanding is key to the success of any conservation program. The future continuation of a successful grizzly

bear conservation program will depend on both a concerted efforts by agencies and professionals but also on a continuation of public support and understanding of what needs to be done to conserve this bear.

In 1979 a hunter in the San Juan Mountains of southwest Colorado killed an adult female grizzly bear. This was the first grizzly bear seen in this area in decades. Following this find, two years of intensive research failed to document any verified evidence of grizzly bears in this area. It seems likely that the bear killed by the hunter was the last remnant bear in this area more than 800 miles from the nearest existing grizzly bear population. The San Juan Mountain area is remote and it is possible that a few remnant bears could exist in this area for many years and escape detection, but the likelihood of a population of bears remaining in this area is very low.

2. Historic and Future Range

The grizzly formerly occurred in at least 16 states of the western United States as late as the year 1800. This range gradually decreased as settlement of this area continued. By 1922 the range had been dramatically reduced and grizzlies were only present in isolated mountain areas. This was reduction of approximately 75% in less than 100 years. By 1922 the range of the grizzly was a series of isolated populations that, because of their isolation, were more vulnerable to extinction. Of the 37 separate grizzly populations present in 1922, 31 were eliminated by 1975. Of the 5 populations that remained, 4 were contiguous with larger populations across the Canadian border

By 1975, the range of the grizzly was reduced to 5 separate populations in the four states of Wyoming, Montana, Idaho, and Washington (Figure 1; Table 1). It was thought in 1975 that grizzly bears still remained in the Bitterroot Mountains of Idaho and Montana. Investigations since 1975 have found no evidence of grizzly bears in this area. The last grizzly bear verified in this area was in the early 1940s.

The present range of the grizzly is shown in Figure 1. The intention of the grizzly bear recovery program is to expand the range of the grizzly as much as possible within the large blocks of publicly owned lands in the northern Rocky Mountains and the North Cascades. Plans are being considered to reintroduce the grizzly into the Bitterroot Mountains. A program is ongoing to evaluate the linkage zones between the existing with the intention of maintaining the opportunity for reconnection between existing populations (Servheen and Sandstrom 1995). The range of the grizzly population in the Yellowstone ecosystem is expanding as this population continues to increase. The result of all this is that the range of the grizzly bear may expand around and possibly between some of the existing populations, but the overall range of the species will never be more than a fraction of its historic range in the American west.

4. Population Monitoring Systems

The Interagency Grizzly Bear Study Team (IGBST) monitors the grizzly population in the Yellowstone ecosystem. Population monitoring in the other ecosystems is done by various agencies. The Grizzly Bear Recovery Plan outlines a monitoring scheme that employs 3

demographic sub-goals to measure and monitor recovery of each grizzly bear population. The monitoring area is the recovery zone and within 10 miles outside the recovery zone boundary. The population criteria monitored include:

- Number of unduplicated sightings of females with cubs of the year seen annually within the recovery zone and within 10 miles outside the recovery zone boundary;
- Distribution of females with young or family groups throughout the recovery zone; and
- Limits on annual total and known human-caused bear mortalities within the recovery zone and within 10 miles outside the recovery zone boundary.

The goal for unduplicated sightings of females with cubs of the year (FWCs) is measured to demonstrate adequate reproduction and to estimate an average minimum population size. Six year averages of the minimum number of FWCs account for two breeding cycles, based on an average 3 year breeding interval. The number of FWCs also demonstrates that a minimum number of adult females are alive within the population to reproduce and offset mortality. Efforts are well underway to estimate the total Yellowstone population rather than the minimum population size. This information will be released in the year 2000.

The goal for distribution of females with young (cubs or older offspring) is designed to demonstrate adequate distribution of the reproductive cohort within the recovery zone. Distribution of family groups also indicates likely future occupancy of these areas because grizzly bear female offspring tend to occupy habitat within or near the home range of their mother after weaning.

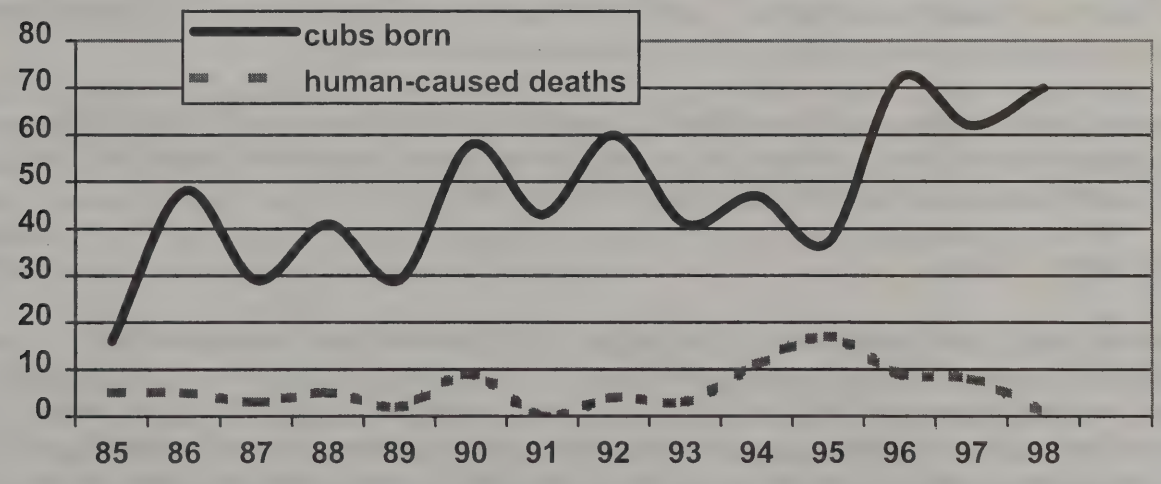

Figure 2. Cubs known to be born compared with all known human-caused deaths, Yellowstone area, 1985-1998.

Strict limits on human-caused mortality are necessary because grizzly bears have a very low reproductive rate and are sensitive to excessive mortality. Limits on female mortalities are especially important.

5. Legal Status

The grizzly bear in the lower 48 United States is listed as a threatened species under the Endangered Species Act. It is therefore protected under Federal law. The killing of grizzly bears is prohibited except in self defense or defense of others. Actions such as timber harvest, mining, and road building, in grizzly bear habitat on federal lands is subject to review to assure that such activities do not jeopardize the species. Federal officials carry out these reviews. Activities that are found to effect grizzly bears must be modified to minimize adverse effects. The result of this legal protection is that every action on Federal lands is modified to some extent to minimize impacts on bears.

The object of listing of species under the Endangered Species Act is to recover the species to the point at which protection under the Endangered Species Act is no longer required. Recovery is achieved under a Recovery Plan. Recovery means that the species or particular population of a species is reasonably secure, that it has sufficient habitat to meet its needs and that this habitat is also secure, and that adequate regulatory mechanisms will be in place to assure the future of the population. Recovery is more than numbers of animals. Recovery also requires that agencies work to develop and agree to implement a detailed management plan, to monitor the population and its habitat into the future. This long-term management plan is called a Conservation Strategy. The Conservation Strategy is the management plan for the population and its habitat after recovery and delisting. It is important to recognize that in order to maintain healthy grizzly bear populations after recovery, there will continue to be careful management of grizzly habitat, strict limits on human-caused mortality, and careful monitoring of populations. The Yellowstone Conservation strategy will be released for public comment in early 2000.

Recovery does not mean a reduction in habitat or population protections – it does mean that those protections will be administered by the state fish and game agencies and the Federal land management agencies, rather than the Fish and Wildlife Service.

6. Population Threats

Threats to grizzly bear populations relate to human-caused mortality and small population numbers. Long term declines in grizzly bear numbers have been the result of excessive human-caused mortality. Causes of mortality have changed as management actions were implemented. Major efforts to improve human storage of attractants to bears such as garbage, foodstuffs, and game meat have resulted in a reduction in human-bear conflicts and the number of dead bears. The fact that most bear-human conflicts now occur on private rather than public lands is evidence that future management and education efforts will have to focus more intently on these private parcels where our ability to legal ability to require proper food storage is limited.

The sustainable level of human-caused mortality is an important parameter that can be used to judge the impact of existing mortality rates. The rate that is assumed to be sustainable for a population of several hundred bears is no more than 6% human-caused mortality based on the work of Harris (1986). However, this is the total and not the known rate. The exact difference between the known and total human-caused mortality rate is a matter of constant debate and is important because the sustainable mortality level is critical to population recovery. We are now finishing a recalculation of the unknown human-caused mortality rate and will put this out for public comment in the year 2000.

7. Habitat Threats

Habitat threats relate to human activities such as resource extraction, housing development, road building in forested areas and improvement of existing high-speed highways, livestock grazing, and recreation.

Roads have two major effects on bears: (1) increased mortality risk for those bears using roaded areas; and (2) loss of habitat for those bears that avoid roads. A new Geographic Information System (GIS) analysis technique called the moving window technique allows us to monitor the spatial distribution of road density. Through this GIS approach and the innovative research approaches in Mace and Waller (1997) we now realize that grizzly bears use habitats less than expected where road densities exceed certain levels. Closure of some of the existing roads and limits on unnecessary new road building in grizzly bear habitat is one of the most important tools we can use to improve grizzly bear habitat.

Continued recovery program efforts have limited new road development in forested areas and have initiated road closure and reclamation programs that have reduced road density in many areas. Pressure for road access continues, however, and it requires continued efforts to maintain habitat security.

Private land development is one of the major threats to grizzly bears in the Rocky Mountains. Continual increases in numbers of human developments eliminate seasonal habitats from bear use. This is especially important in valley bottoms where most private lands are and which are also important spring habitat. Efforts to limit this development of private lands can only be successful by developing partnerships with local residents and their voluntary acceptance of lifestyles that have minimal impact on wildlife.

Habitat fragmentation is a major threat to grizzly bears as private owners develop lands between existing populations. Habitat fragmentation is also occurring inside existing population areas due to private land development. High-speed highways are continually being upgraded to accommodate higher traffic volumes. As this is done, it makes these highways wider, with higher traffic volumes and usually less vegetative cover nearby. All these factors make these highways effective habitat and population fragmentation factors for all wildlife species.

8. Management

Management of grizzly bears and grizzly bear habitat is accomplished through an interagency cooperative effort to implement the Grizzly Bear Recovery Plan (USFWS 1993). This management involves habitat maintenance and monitoring, population monitoring, management of bears involved in bear-human conflicts such as livestock depredations, public education efforts, limiting the ability for bears to get human foods and garbage, and management of roads, and extractive resource activities such as timber harvest and mining. In some areas of suitable habitat currently without a population of bears, reintroduction of grizzly bears is being considered. Augmentation of small existing populations has been accomplished (Servheen et al. 1995) by moving young females into such populations to enhance the female population and hopefully increase reproduction.

9. Human-Bear Interactions

Human-bear interactions are the main source of bear mortality and habitat loss. Mortality factors are usually related to availability of human foods such as garbage, agricultural activities such as livestock, honey production, and fruit trees. Interactions between grizzly bears and elk big game hunters are a regular source of conflicts and dead bears. Indirect factors include timber harvest and mining in grizzly habitat that cause disturbance and reduce of eliminate habitat.

Very few of the more than 575 different grizzly bears that have been captured and radio-tracked in Montana, Wyoming, and Idaho since 1975 have died naturally. Most grizzly bear deaths are due to humans. Causes of death include management removal of repeat problem bears, illegal kills, self-defense by people who are threatened by bears, auto and train collisions, and mistaken identity kills by black bear (Ursus americanus) hunters.

10. Public Education Needs

The future of the grizzly bear will be built on the support of the people who live, work, and recreate in grizzly habitat. Grizzly bears cannot be strictly protected; they must be managed. But the public needs to learn ways to minimize conflicts with bears and how to coexist with grizzlies. This means the pubic education about the needs of bears and realistic ways to live compatibly with bears are critical to the success of the conservation effort. Public education is now being concentrated on hunters and recreationists to educate them about how to avoid confrontations with bears. Efforts have also been directed at livestock producers to minimize predation by special herding techniques, removal of dead animals from use areas, and electric fencing around beehives and sheep bedding areas.

Further public education work is needed on private lands where the behavior of new residents may determine the death or survival of resident bears. Some success has occurred with local communities by developing a sense of ownership in maintaining grizzly bears through local community planning (Pelletier 1996). To gain local community support, however, requires intense effort with community members and building trust. This is an effort that must be repeated in each community. There must be recognition that such local community conservation

efforts are a vital part of any bear conservation effort so the resources are available to complete such programs.

11. Specific Conservation Recommendations

Key research needs (not necessarily in priority) include:
1. Documenting effects of paved, high-speed highways on bear habitat use and movements and developing design guidelines to minimize detrimental effects of highways on bears and other large carnivores.
2. Documenting infection rate, distribution, and a possible cure for white-pine blister rust (*Cronartium ribicola*) on whitebark pine (*Pinus albicaulis)* in the Yellowstone ecosystem because whitebark pine cones are a major grizzly bear food.
3. Improving comparative monitoring systems to assess productivity of major foods within and between all ecosystems.

Management needs include:
1. Monitoring female survivorship and reproductive rates in the Northern Continental Divide Ecosystem, Cabinet-Yaak, and Selkirk recovery areas to calculate population rate of change with confidence.
2. Successfully reestablishing grizzly bears into the Bitterroot recovery area.
3. Placing additional bears into the Cabinet-Yaak recovery area to strengthen this population.
4. Careful access management to assure habitat security and adequate road management.
5. Initiating public outreach and a process to augment the population in the North Cascades recovery area.
6. Improving public relations, including information and education involving local people in ownership of recovery, and targeting special groups such as backcountry users and new residents in spring habitats for increased outreach efforts.
7. Completing the linkage zone analysis between all recovery areas and implementing necessary management actions to maintain possible linkage opportunities for all wildlife species.
8. Assisting in the development of locally developed land management recommendations by private landowners in grizzly habitat so people can learn to live in such areas with limited effect on bears.
9. Establishing improved cross-border management planning with Canada.
10. Improving easement actions to assure maintenance of grizzly habitat on private lands that are subject to development.

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Table 1. The status of the separate grizzly bear populations in the lower 48 United States.

Population	**Recovery Area (sq mi)**[i]	**Population Estimate**	**Range Status**
Yellowstone	9200	400-600+	Expanding due to population increasing at approx. 4%/year
Northern Continental Divide	9500	400-500	Limited expansion to the east onto private ranch lands
Cabinet-Yaak	2600	20-30[1]	No range expansion
Selkirk	2000	25-35[2]	Increasing numbers within range; some bears recently seen outside existing range
North Cascades	10000	5[1]	No expansion. Distribution unclear.
Bitterroot	5600[3]	0	NA

[1]U.S. portion of this ecosystem that spans U.S. and Canada.
[2]Includes U.S. and Canadian portions of this ecosystem.
[3] Core wilderness of this ecosystem.

Figure 1. The present range of the grizzly bear and the proposed Bitterroot restoration area.

Concluding remarks: The bottom line is the grizzly bear can be recovered in many instances, but it's going to take commitment, it's going to take care, and even recovery when it's achieved is still going to be a very careful process that will require everyone to be careful with bears and minimize mortality on bears. We can do it and I thank all of you. You are the folks that are on the front line, in many cases, with bears in bear habitat. The good things that are happening with bears today are due to a great degree because of the support and good work of people like yourselves. Thank you.

John Mundinger: Thank you, Chris. Our next speaker is Ed Bangs. As Chris is the grizzly bear recovery coordinator, Ed is the wolf recovery coordinator for the Fish and Wildlife Service. He's stationed in Helena, and prior to coming to Montana, Ed served as the wildlife biologist at the Kenai National Wildlife Refuge in Alaska. He worked on a variety of species in Alaska, including wolves, coyotes, lynx, brown bears, martens, wolverine, moose and caribou. He's led the wolf recovery efforts in Montana since 1988.

Introductory remarks: He did good. The check's in the mail, Chris, thanks. Well you'll notice if you've ever heard a wolf talk before, most biologists use slides. The reason for that is the chance of being hit by gunfire in a darkened room really goes down. So what I'm going to do is just go through some slides pretty quickly. We've given this program about 400 or 500 times in the western U.S., primarily in northwestern Montana, and I'm going to be talking about wolf recovery in Montana, Idaho and Wyoming.

Ed Bangs Prepared Remarks

GRAY WOLF RESTORATION IN THE NORTHWESTERN UNITED STATES

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Sixty years after being nearly exterminated from the lower 48 states, the gray wolf (Canis lupus) was listed under the Endangered Species Act (Act) in 1974 and was eventually restored to Montana, Idaho and Wyoming. Wolves, once common throughout North America, were listed as endangered under the Act because they had been deliberately exterminated in the lower 48 states, except northeastern Minnesota. Wolves remained abundant in much of Canada and Alaska. Recovery began in northwestern Montana in the late 1970's by encouraging natural dispersal from nearby expanding Canadian wolf populations. Wolves first denned in NW Montana in 1986. Wolf numbers steadily increased until 1996 when there were a minimum of 70 wolves in 8 different packs that lived solely in NW Montana. An unusually severe winter in 1996/97 caused a sharp decline (≥30 to 50%) in the white-tailed deer populations, the primary prey of wolves. The number of wolves dropped to just over 50 in 5 packs in 1997. Wolf numbers have slowly increased, and currently number about 60 wolves in 7 packs. Since 1987 annual confirmed minimum livestock losses averaged 6 cattle, 5 sheep, and less than 1 dog. Most wolves in NW Montana live in a mix of private and public land.

Between 1979 and the late 1990's, extensive research on wolves in NW Montana was supported by a host of state and federal resource management agencies. Field work and data analysis were carried out largely by graduate students and the University of Montana. Those studies investigated the relationships between wolves and other wildlife, including white-tailed deer, elk, and moose, other predators such as mountain lions and coyotes, and livestock. This research indicated wolves were just another predator on wild ungulates, neither much less nor much more effective than other native predators, such as mountain lions, black and grizzly bears, or coyotes. Wild predators typically killed different types of ungulates (injured, sick, or very young and very old individuals) than did human hunters. Wolf predation in combination with other factors such as winter weather, human hunting, other predators, and habitat conditions, contributed to a

decline in white-tailed deer and elk in the North Fork of the Flathead River. As a result of that prey decline, wolf numbers in that area dramatically declined, from nearly 30 wolves in 3 packs during the most intensive research in the early 1990's to a current estimate of about 5 individuals that did not even produce pups in 1999. Wolves often trailed mountain lions to take over their kills and killed several lions. Wolves also killed a few coyotes. Direct competition for the types of ungulates that are most vulnerable to predation was likely the main impact that wolves would have on other wild predators. While wolves displaced lions and coyotes from ungulate carcasses, wolf kills were often taken over by grizzly bears. Studies of wolf genetics and dispersal indicated that genetic diversity was high and likely not a management concern as long as opportunity for occasional dispersal from wolf populations in Canada and other U.S. recovery areas in Idaho and Wyoming was maintained. Research indicated that wolves often lived near livestock (primarily cattle) and other domestic animals but conflicts were rare. Wolves commonly fed on carrion of both livestock (bone yards) and wild ungulates (road and train kills, unretrieved hunter-killed deer and gut piles). Abundance of natural prey and vulnerability of livestock affected how often wolves attempted to attack livestock. Sick or wounded livestock or small livestock, such as calves or sheep, were particularly vulnerable to wolf predation. At other times wolves appeared to attack livestock without any predisposing factors.

A large number of studies and research are currently being conducted on wolves in the Yellowstone and central Idaho experimental areas so that accurate information can be used to better manage wolf populations and expand the level of knowledge about wolves. Examples of the preliminary and tentative results of those studies are: Wolf predation rate studies in which early results indicate elk are 90% of wolf prey in Yellowstone and kill rates are about 15 elk/per wolf/per year. In Idaho wolves also preyed mainly on elk but wolves there killed a higher proportion of mule deer. Wolf kills were more likely to be in open habitats and scattered than lion kills which were covered and in thicker cover. This gave a visual impression that wolves killed more deer and elk than mountain lions, but actually on average lions kill more ungulates per individual per year than do wolves. Annual wolf kill rates typically average the equivalent about 20 adult-sized deer a year while adult lion kill rates can be twice as high. Both wolves and lions tended to prey on the most vulnerable wild ungulates such as the very young, very old, injured, or sick individuals. Bison are difficult to kill and only one pack has learned to so effectively. Carcasses of elk killed by wolves were utilized by a wide variety of other wildlife species and provided a year-long food source that would likely increase overall wildlife diversity. Coyote numbers in some areas may have been reduced by half because of wolves killing them. Mountain lions and wolves tend to kill the same types of prey but lions are usually confined to rugged steep terrain while wolves preferred flatter terrain. Grizzly bears often usurped wolf killed ungulates. Studies are investigating the affect of wolves on elk distribution on winter feeding grounds in Wyoming. Earlier studies in Montana indicated wolves did not change ungulate distribution on natural winter ranges but apparently caused ungulates to be more wary and to temporarily retreat to thicker cover when wolves were present. Preliminary results from a study of cattle mortality on remote Forest Service allotments in Idaho suggested that for every one calf confirmed to have been killed by wolves between one and five may actually have been killed but not confirmed. Nearly half of all documented calf mortality was caused by wolves, pneumonia was responsible for most other losses. This work also suggested that wolf control stopped further depredations and that livestock in open habitats and/or was closely herded may be less susceptible to wolf-caused problems.

In 1988 and 1990 Congress directed the National Park Service to prepare a series of reports on the potential affects of reintroducing wolves to Yellowstone National Park. The effects included wolf depredation on livestock, wolf predation on wildlife, land-use restrictions, tourism, other predators including grizzly bears, diseases, and a wide variety of other issues. Those reports were completed and published in 1990 and 1992. In 1990, Congress established a Wolf Management Committee, consisting of federal, state, and private special interest groups to try to forge a political compromise on the issue of wolf reintroduction in both Yellowstone and central Idaho. Their report was completed in May 1991 but Congress chose not to act on the Committee's recommendation, which included a reintroduction and more flexible wolf management than is normally allowed under the Endangered Species Act. All these reports, and all subsequent investigations, made it clear that reintroducing wolves in Yellowstone National Park would ultimately result in wolves attempting to recolonize areas throughout Montana, Idaho, and Wyoming and far outside the reintroduction areas.

In late 1991, Congress directed the Fish and Wildlife Service to lead preparation of an environmental impact statement (EIS) to examine the effect of reintroducing wolves to Yellowstone National Park and central Idaho. The planning and public involvement effort took 2 years to complete. By the time it was finished the Service had distributed over 750,000 documents, conducted over 130 public meetings and hearings, and reviewed 170,000 public comments. The decision was to reintroduce wolves to both Yellowstone and central Idaho as nonessential experimental populations, the most flexible classification for species listed under the Endangered Species Act. The decision was approved in spring 1994 by both the Secretary of the Interior (Fish and Wildlife Service, National Park Service and Bureau of Land Management) and the Secretary of Agriculture (Wildlife Services and Forest Service).

The EIS predicted that a recovered wolf population (a minimum of 10 breeding pairs, estimated to be about 100 adult-sized wolves) in the Yellowstone area would kill an average of 19 cattle and 68 sheep and up to 1,200 ungulates (primarily elk) annually. This would not affect hunter harvest of male ungulates but may reduce hunter harvest of female elk, deer, and moose in some herds. Hunter harvests or populations of bighorn sheep, mountain goats, or antelope would not be affected. Bison would not be preferred prey. Wolf predation may reduce populations of elk 5%-30%, deer 3%-19%, moose 7%, and bison up to 15%. The presence of wolves would not change uses of public or private land except for potential use of M-44 cyanide devices where wolf populations occur. Visitor use was predicted to increase 5-10%. At wolf recovery, annual economic losses were estimated to be $187,000-$465,000 in hunter benefits (what hunters said hunting female elk was worth to them), $207,000-$414,000 in potential reduced hunter expenditures (what hunters of female elk said they would have spent hunting), and $1,888-$30,470 in potential livestock losses. Annual increased visitor expenditures were estimated at $23,000,000 and the existence value of wolves was estimated at $8,300,000 (what people believed having wolves in the Yellowstone area was worth to them). Similar predictions were made for the central Idaho area. Depending upon their distribution, more than 100 adult-sized wolves would probably increase impacts above those predicted in the EIS. To date, at least the trends in these predictions appear to have been fairly accurate. It will take time before wolf numbers and distribution stabilize and the true effect of having wolves back in these areas can be ascertained.

The restoration of wolves to public lands in the western United States, particularly Yellowstone National Park, was proposed as early as the 1940's. After years of direct involvement by Congress and exhaustive public involvement and planning, 35 wolves were reintroduced to wilderness areas in central Idaho and 31 to Yellowstone National Park, Wyoming in January 1995 and January 1996. Those wolves, originally from Canada, were designated as nonessential experimental populations to increase management flexibility over what is normally allowable for species listed under the Endangered Species Act. Examples of this flexibility are: landowners could harass wolves at any time, livestock producers could shoot wolves seen attacking livestock, wolves could be relocated if they significantly impacted wild ungulate herds (as defined in approved state wolf management plans), there would be virtually no land-use restrictions, the Service could use special permits to take wolves for various management reasons, and funding was offered for state and tribal leadership in wolf recovery actions. Currently wolves in Wyoming and Montana are primarily managed by the Fish and Wildlife Service, National Park Service (in Parks), and USDA Wildlife Services. In Idaho, wolves are primarily managed by the Nez Perce Tribe and Wildlife Services, under a cooperative agreement with the Fish and Wildlife Service.

Reintroduced wolves adapted better than predicted and by late 1998 there were 110-120 wolves in each area. In 1999 early estimates indicted about 160 wolves could be in each area assuming each pack had a litter of at least 5 pups. However, by late December 1999, the minimum population estimate dropped to 116 wolves in 8 breeding groups in the Yellowstone area, because of pup mortality and high dispersal. The late December estimate in Idaho was 144 wolves in 10 breeding groups. To date wolves have settled primarily on remote public lands but that will change as the population expands and more wolves disperse beyond where wolf packs currently exist. Except for a few temporary closures to protect wolf viewing opportunities around active dens in Yellowstone National Park, the wolf restoration program has caused no land-use restrictions that might disrupt traditional human activities such as logging, mining, livestock grazing, hunting, trapping, or wildland recreation. Over 40,000 visitors to Yellowstone National Park have seen wolves and public interest in them is extremely high. Minimum confirmed livestock losses have annually averaged about 2 cattle, 19 sheep, and 2 dogs in the Yellowstone area and 7 cattle, 23 sheep, and 2 dogs in central Idaho. In addition, 1 newborn horse was killed in the Yellowstone area. Since 1987, the Service and USDA Wildlife Services have killed about 38 wolves in NW Montana, 6 in central Idaho, and 18 in the Yellowstone area because of conflicts with livestock.

Several lawsuits have been filed by a wide variety of groups, some who support (wanting more protection) and some who oppose (wanting less or no protection) wolf restoration. Several lawsuits were pooled into a single case that questioned whether the Service's use of an experimental population designation for reintroduced wolves illegally reduced protection of wolves that might naturally wander into the experimental areas. To date no naturally dispersing wolves have been found in the Yellowstone area but at least three wolves from NW Montana have dispersed into the central Idaho area. The Wyoming District Court eventually ruled against the Service's position in December 1998 and ordered all the reintroduced wolves removed, but stayed its own decision pending appeal. That case is currently being reviewed by the Tenth Circuit Court of Appeals in Denver, Colorado and their ruling is expected in early 2000. A large

number of legal outcomes are possible including one that could order all the reintroduced wolves to be removed from the experimental population areas. Other litigation on a wide variety of wolf management issues is almost certain because of the strong symbolism of wolves to various special interest groups and the public, both at the local and national level.

Since 1987, livestock producers who experienced wolf-caused losses in Montana, Idaho, and Wyoming have been compensated about $105,000 by a private fund administered by the Defenders of Wildlife, who support wolf recovery and management efforts. The Service led interagency wolf recovery program focuses its efforts on achieving the wolf recovery goals while trying to address the concerns of people who live near wolves and removing the few wolves that do cause conflicts. Over 85% of all known wolf mortalities are caused by people and the majority of those are a result of agency wolf control actions. Wolf populations should be fully recovered (30 packs for 3 successive years) and will no longer need protection under the ESA in late 2002. At that time wolves could be delisted and the affected states and tribes could manage wolves without federal oversight. State and tribal management programs will likely allow wolves to be killed in defense of life and property and in regulated public harvest programs, just as other large predators in these states are managed. Ultimately wolf numbers (above minimum recovery levels) and wolf pack distribution will be determined by state and tribal wildlife management agencies.

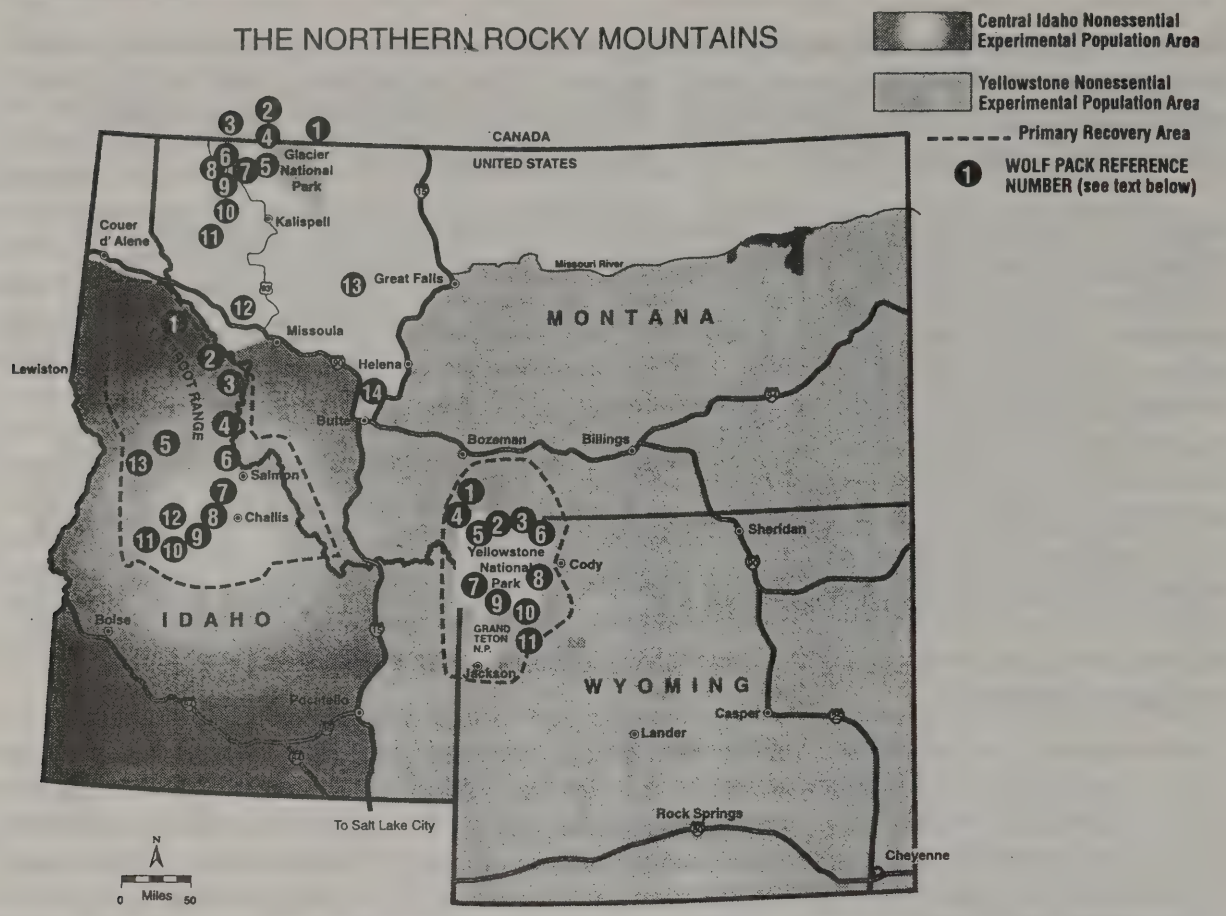

Fig. 1. Location of wolf packs (≥2 wolves) in the northern Rocky Mountains of the United States in 1998.
LEGEND: Number corresponding to map; Pack Name; years pups produced from 1995 to 1998; total number wolves estimated November 1998; current status; notes.
NORTHWESTERN MONTANA. *(from 1995 only)*. Average 1998 pack size = 4.5.
1; Belly River; 1995, 1996; 2; unknown; few individuals reported, occasionally enters U.S., alphas and pups legally killed in 1995 and alphas legally killed in 1997.
2; Spruce Creek; 1995, 1996; 7; unknown; readjustment of packs in Glacier National Park in 1996 moved pack entirely into Canada.
3; Wigwam; 1998?; >2; unknown; pack illegally poisoned in 1991, scattered individuals primarily in Canada, in 1997 new pair seen at old den, no pups.
4; North Camas; 1995, 1998; 4-5; adults killed in territorial conflicts in 1996-1998 that pushed pack entirely into Canada.
5; South Camas; 1995, 1996, 1997, 1998; 6; active; pack expanded territory to Canadian border after prey declines in Glacier National Park in 1996.
6; Graves Creek; 1998; 4-5; active.
7; Whitefish; 1996, 1997, 1998; 9; active.
8; Murphy Lake; 1995, 1996, 1997; 5; active; pack involved in livestock depredations in 1997, 2 adults killed, no pups in 1998.
9; Little Wolf; 1998; 2 adults; adults tested high for parvovirus titers and pups not located since midsummer.
10; Pleasant Valley; 1996, 1997, 1998; 6; active.
11;Thompson River; 1995, 1996; 2-3; only radioed wolf died in 1997 and contact with pack lost, no pups evident since 1996, only reports of individual adults in area.
12; Ninemile; 1995, 1996, 1997, 1998; 8; active; 4 adults killed after depredations in 1998.
13; Sawtooth; 1995, 1996; scattered individuals; livestock depredations in 1996, all 4 adults killed and 10 pups relocated, 4 pups left on site in 1997, more livestock depredations only 2 remaining yearlings killed, few reports of scattered individuals in 1998.
14; Boulder; 1995, 1996, 1997; 3; livestock depredations in 1995, 1996, 1997. Control in 1997, killed 3 adults, 4 yearlings, and relocated 4 pups. Only 1 adult male and 2 yearlings were left in 1998.
CENTRAL IDAHO. Average 1998 pack size = 8.4.
1; Snow Peak; 1998; 7; active; both alphas separately involved in sheep depredations during different years, female was relocated before pairing with male.
2; Kelly Creek; 1997, 1998; 14; active; alpha male naturally dispersed from northwestern Montana.
3; Big Hole; 1998; 7; active; both alphas involved in depredations and relocated in fall 1996. Formed new territory in winter 1996/97.
4; Selway; 1996; 4; active; one of first 3 breeding pairs in 1996 but no pups since then.
5; Chamberlain; 1996, 1997, 1998; 14; active.
6; Jureano Mountain; 1997, 1998; 8; active; 2 yearlings relocated for cattle depredations in 1998.

Figure 1. Continued
7; Moyer Basin; 1997, 1998; 9; active; one yearling relocated for cattle depreation in 1998.
8; Twin Peaks; 1998; 5; active.
9; White Cloud; 1998; 11; active; alpha male unknown origin.
10; Stanley Basin; 1997, 1998; 14; active.
11; Bear Valley; 2; male/female pair has not produced pups since it formed in 1996.
12; Landmark; 1996, 1997; 5-7?; alpha pair died spring 1998, status others unknown.
13; Thunder Mountain; 1998; 7; active; alpha male unknown origin.
GREATER YELLOWSTONE AREA. Average 1998 pack size = 10.
1; #16; 1997, 1998; 7; lone female and 6 pups, female was injured by car in summer 1997 and her 1997 pups were raised by their father's pack (Chief Joseph).
2; Rose Creek; 1995, 1996, 1997, 1998; 24; active; female and 8 pups relocated to Park after male illegally killed in spring 1995.
3; Druid Peak; 1997, 1998; 9; active; pack has twice killed wolves in neighboring packs, including 2 litters of pups that died from exposure after the adults caring for them were killed.
4; Chief Joseph; 1997, 1998; 13; active.
5; Leopold; 1996, 1997, 1998; 13; active; first pack formed of dispering members of reintroduced packs.
6; Sunlight; no pups; 2; formed 1998.
7; Nez Perce; 1996, 1997, 1998; 9; active; several members were temporarily held in captivity because of cattle depredations in 1997.
8; Crystal Creek; 1997, 1998; 17; active.
9; Thorofare; 1997; 5 yearlings, both adults died, female in avalanche and shortly thereafter, the male was killed by neighboring pack.
10; Soda Butte; 1995, 1996, 1997; 8; active; alpha male died of old age in winter 1997/98.
11; Washakie; 1997; 2 yearlings possibly remain; 2 adult and 1 yearling removed by control, 2 radiocollared yearlings dispersed.

Concluding remarks: Maine is probably the best unoccupied wolf habitat left in the lower 48 states. There's certainly good wolf habitat in northern Mexico and southern Colorado, and just last year Congress had a study done on the Olympic Peninsula, looking at wolves in that area. So public interest in wolves is very high, but in the lower 48 states there are very very few places left where we'll be able to have large predators. I think that's one of the reasons probably we live in Alaska or Montana, Idaho and Wyoming is wild spaces, public lands and wildlife are very important to our lives; and hopefully wolves are viewed as a positive contribution if they are managed wisely. Thanks a lot.

John Mundinger: Thank you Ed. The final speaker in our first panel is Glenn Erickson. Glenn has been with Montana Fish, Wildlife & Parks since 1972. Prior to coming to Helena as the wildlife management bureau chief, he worked as a biologist in White Sulphur Springs and in Livingston. He is presently responsible for coordinating the development of the department's hunting regulations and also supervising the department's participation in grizzly bear management.

Glenn Erickson Prepared Remarks

MONTANA BIG GAME POPULATIONS AND PREDATOR MANAGEMENT

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INTRODUCTION

The relationship between predators and their prey is a very complex issue. The literature is equivocal; in some cases, predator control has been shown to increase prey populations and in other cases it has not. Connolly (1978), reviewed 45 studies that indicated predation was a limiting or regulating influence and 27 studies that indicated predation was not limiting. He concluded that predators acting in concert with weather, disease, and habitat changes could have important effects on prey numbers.

From a statewide perspective, Montana's deer and antelope populations have declined in number and then rebounded several times since 1960. Elk have generally increased in number and distribution. However, in recent years hunting quotas have been reduced on elk in the North Fork of the Flathead drainage and on moose northwest of Yellowstone Park due to reduced survival of

young. Predation was cited in the biological justification as one of the reasons for poor survival of young. Sportsmen and the department have recently expressed concern for the low elk calf survival observed in the elk populations of the Upper Yellowstone Valley an area where sightings of wolves and wolf/livestock conflicts have become more frequent.

Montana Fish, Wildlife & Parks has contributed annually $110,000 to the Montana Department of Livestock's (MDOL) aerial coyote control program. This represents about ¼ to 1/3 of the total MDOL program expenditures which are incurred by Wildlife Services, a United States Department of Agriculture Animal and Plant Health Inspection Service agency (previously Animal Damage Control). MFWP believes that wildlife benefits are in line with MFWP's share of the program but, until recently, we had not evaluated the effectiveness of the program.

In response to sportsmen and legislative direction, MFWP in 1997 directed additional funding to coyote control in south central and northeast Montana. The purpose was to determine if coyote control directed at specific hunting districts would be beneficial and also cost effective. The results, some of which were presented here today by Jay Newell, will be used to improve predator control efforts in the future and insure that the costs are commensurate with the benefits received.

GAME POPULATION STATUS

Mule Deer

Mule deer occur throughout Montana. Since 1960, mule deer harvest has reached a low 4 times; 65,000 in 1967, 26,000 in 1976, 60,000 in 1986 and most recently 42,000 in 1998. The highs recorded during the same period where; 125,000 in 1961, 85,000 in 1973, 113,000 in 1984, and 95,000 in 1992. Although the trend in harvest is slightly down through the period 1960 – 1998, peak harvest levels are indicative that populations will recover rapidly under favorable conditions for survival following periodic declines. One of the longest population data sets we have is from the Missouri River Breaks of eastern Montana. Here too the population recovered and to levels equal to previous highs.

In 1998, FWP adopted a deer harvest management plan titled "Deer Population Objectives and Hunting Regulation Strategies". The plan established population objectives, hunting regulation strategies, predictive models to use in establishing the appropriate season, and a monitoring program. There are currently 79 trend and census area survey locations in Montana for mule deer. Marked improvement in fawn recruitment was noted from the spring of 1998 to the spring of 1999.

Region	1998 (31,428 deer)		1999 (35,311 deer)
1	13-38 Fawns/100 Adults	47-71	Fawns/100 Adults
2	27-67	28-90	
3	9-45	29-71	
4	15-60	38-73	
5	16-38	23-67	
6	30-73	45-70	
7	63-91	50-105	

Elk

Historically, elk were abundant in eastern, central and southwest Montana. Following transplants of elk from Yellowstone Park and the institution of hunting season closures in 1913, elk numbers began to increase. By 1915 the state's elk population exceeded 37,000. Upon completion of the 1992 Elk Management Plan the state's population was estimated at 90,600. A status review was completed in 1996 and again in 1997 when 93,401 and 99,627 elk respectively were estimated in the state. These estimates are based primarily on observed numbers in many areas and therefore the actual number of elk in the state, based upon 60% observability, may approach 160,000. Currently several populations exceed the objectives established in the 1992 Elk Plan and seasons have been liberalized to reduce selected herds.

Surveys of the Northern Yellowstone Elk Herd began in the Upper Yellowstone began about 1912 when Scout McBride counted 18,671 elk on horseback over several days (Erickson, 1981). Since 1976 aerial elk counts have ranged from 9,000 to 19,000, with an average of 13,900 elk. The elk count in the 1998-99 winter was 11,000. The elk count made a few days ago-recorded 14,500. Adding the late season elk harvest from last year brings the 1998 count up to 13,152 making the 1999 count approximately 10% higher . There were also nearly 3,000 elk north of the Park line and 1,000 of those have already moved north of Dome Mt. Wildlife Management Area. Surveys early this winter, however, show about half the number of elk (265) counted the previous year. Calf numbers were also low at 13/100 cows.

PREDATOR MANAGEMENT

There are two general approaches to predator control: 1) overall reduction of numbers on the assumption that depredation losses correlate directly with predator abundance and 2) selective control of the depredating individual or local populations (Connolly 1978).

Bounty programs, government hunters, and toxicants are examples of the first approach, and except for the use of toxicants, has generally been unsuccessful (Hamlin, *et al.*, 1996). The banning of the use of toxicants for predator control on public lands effectively eliminated the use of toxicants in 1972. Latham (1951) summarized numerous studies and concluded that the bounty system failed for a variety of social, economic, and ecological reasons. Some of the more important reasons discussed were:

1) **Usually ineffective in controlling predator populations (at least as commonly used)**

   Connolly and Longhurst (1975) concluded that a simulated coyote population could survive an annual control kill of 70 percent. At a 75 percent level of control, the population still persisted for more than 50 years. Despite intense hunting and trapping with coyote fur prices ranging from $42.53 to $66.22, coyote populations on the Missouri Breaks study area of Montana, especially within the timbered breaks habitat, increased from 1977 through 1983-84 (Pyrah 1984, Hamlin and Mackie 1989). This price incentive was substantially more than any bounty offered or proposed.

2) **Indiscriminate – beneficial and harmless species killed by mistake**

This involved primarily bounties paid on certain hawks and owls, etc. in the past, but also involved the mistaken trapping of non-targeted species.

3) **Inefficient – bounties paid on: 1) animals killed accidentally or incidentally, 2) animals that would have been killed without the bounty payment, or 3) animals killed in regions where there are no serious conflicts**

For example, an estimated 10,000 to 20,000 coyotes are killed annually in Montana. If we were to offer a $25 bounty, a quarter to half a million dollars could be expended with no additional harvest.

4) **Impractical – costs often too high for the results obtained**

Probably one of the more humorous events in Montana history relating to cost was the bounty enacted in 1887, which paid 5 cents each for ground squirrels (Gallatin County Tribune Article by AnnaBelle Phillips, Bozeman Montana). "The Territorial auditor's books show that the first warrant issued for squirrel bounty was on April 5 and since that time (June 15) the territory has paid out $7,814.05 of which $7556.35 was for squirrels and $257.70 was for prairie dogs. Over 7/8 of the bounty went to Gallatin county where the "squirrel traffic has been worked for all its worth". The fear was that the bounty count would approach $50,000 by year's end and break the Territorial Treasury! To prevent the calamity, on July 11, 1887, Gov. Leslie issued a proclamation calling the 15th Territorial Assembly into "extraordinary session at Helena on August 29, 1887. The extra session brought varied opinions but in the end the bounty was repealed. The best summation of the controversy was probably printed at the time in the Yellowstone Journal " ..The real bone of contention being the outrageous bounty law, whereby the territorial treasury has been drained almost dry, mainly by citizens of Gallatin County engaged in the thrifty pursuit of gophers..."

5) **Conducive to fraud**

Previous bounty laws have been fraught with fraudulent claims. Predators where taken from other areas and reported in the wrong state or county. Hides from one species were disguised as another. Animals remained in wild to breed but the tail or some other evidence for payment was submitted.

6) **Economic waste – furbearers taken when fur is not prime**

For species with a fur value, this is probably the most significant disadvantage of the bounty system, at least for those involved in the fur market. Bounty systems predictably impact the trappers and fur dealers who are dependent on those species for their business.

Reductions in coyote numbers or removal of individual coyotes immediately prior to the time of birth for livestock or game may reduce losses of newborns in small areas (second approach) (Hamlin 1987). Wildlife Services currently uses this approach to selectively control areas where depredation on livestock is most severe. MFWP has recently contracted with Wildlife Services to control coyotes in selected areas to determine if antelope and mule deer fawn survival can be enhanced and populations below carrying capacity can recover more quickly. In addition, some control has also been conducted along the Rocky Mountain Front in cooperation with landowners, just prior to a transplant of bighorn sheep. Although all the results are not in at this time, there is good evidence that predator control at the right time and in selected areas can have a positive influence of antelope and mule deer populations (Refer to J. Newell presentation at this symposium).

The Western Association of Fish & Wildlife Agencies (WAFWA) recently established a Mule Deer Working Group with representatives of all the western state wildlife agencies. Later this year, a white paper on predator management, written by Warren Ballard, Texas Tech University and edited by committee members, will be provided to the wildlife agency directors. The white paper summarizes what is known about predator management from the literature and provides recommendations to the respective wildlife agencies. The following is a summary of some of the recommendations from the draft paper.

Cases where predator control appeared to be effective:

1) Predator control was implemented when deer populations were below habitat carrying capacity.
2) Predation was identified as being a limiting factor
3) Control efforts reduced the predator populations enough to yield results (expected to be approximately 70% of the coyote population)
4) Control is timed to be most effective (i.e. just prior to predator and prey reproduction)
5) The control took place at a focused scale (generally <1,000 km^2)

Factors that must be considered prior to making a decision on whether to implement a predator control program:

1) A management plan must identify:
   a) Current status of the mule deer population and population objective desired
   b) Desired removal goals for predator species
   c) Timing and method of removal efforts
   d) Scale of removal effort (i.e., size and location for control)
   e) Other limiting factors that may be depressing the mule deer population
2) An adaptive management plan that establishes monitoring criteria that will determine the status of both predator and prey populations and identifies thresholds when predator control will be eliminated or modified.

CONCLUSION

FWP recognizes that predator control can be effective when intensively applied to small geographic areas or parcels of habitat. Recent findings from projects in Montana and elsewhere indicate predator control can be effective especially when applied prior to young being born, when game populations are below carrying capacity, and when alternate prey numbers are low. Broad scale bounty programs have not been very effective in the past and it is unlikely those types of programs will be effective in the future because an insufficient percentage of the predator population is removed.

Predators do impact populations and most assuredly do compete with hunters. Although there may be instances where specific herd segments are significantly impacted, the biggest impact will be on the hunter game harvest. Changes in herd distribution and behavior would also be expected. Without management of the predator population as an option, the only recourse is to reduce hunter harvest to maintain game populations.

The recent decline in mule deer populations in some portions of the state has raised the level of concern by hunters about predators. The observation of low elk calf numbers in the upper Yellowstone has also focused concern over the expansion of wolf pack activity north of the Park.

Mountain lions, bears, wolves, and coyotes are all targeted as a factor in declines in game populations depending on your location in the state. FWP currently has no authority to control wolf numbers without a USFWS approved plan detailing when wolves will be relocated if the impact to game populations is severe. The state rejected taking over wolf management prior to delisting because we would be left with all the responsibility and no guarantee of funding or personnel to implement the effort. We are also skeptical of the benefits of relocation based on previous attempts by the Service. Also, it was apparent at that time that if Montana achieved recovery levels before the other adjacent states, wolves would remain listed until all states reached recovery.

We have nearly tripled the quotas of mountain lions and directed research to develop more objective measures to set lion quotas. Using what we have learned from recent studies, we will be implementing changes to the cooperative effort with the Department of Livestock and Wildlife Service's aerial coyote control program.

FWP has recently stepped up our efforts to monitor the elk population north of Yellowstone Park in the upper Yellowstone Valley. In cooperation with the National Park Service and U.S. Fish & Wildlife Service, we will attempt to correlate changes in population parameters with wolf distribution. In December of this year, the governors of the states of Montana, Wyoming, and Idaho signed a memorandum of understanding concerning monitoring and management of a recovered wolf population. The intent of the agreement is to develop state wolf management plans coordinated between the three states for the management of wolves once the populations are delisted. The target date for completion of the coordinated wolf monitoring and management plan is January, 2001. In Montana, the effort will involve an advisory committee and be staffed by a full time FWP employee. We expect the plan development to take approximately two years to complete. Funding we have already received from the Service will only partially cover the anticipated costs of this effort.

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John Mundinger: Thank you Glenn. I would like to thank all of the members of the agency panel for respecting our time constraints. A couple of items before we break. First of all, I noticed in looking out in the audience, I saw several faces from the Montana Legislature. I'm not going to embarrass myself by trying to introduce each of you individually. That assumes I might know your name. But if you would at least stand to be recognized by the rest of the audience, I would appreciate it. The members of the Montana Legislature.

Also, because there are several people who came who are apparently not planning on attending the luncheon, we have rescheduled Doug Smith's presentation to be in this room at 1:00 rather than to be the presentation made during the lunch hour. So if you're not eating lunch here, please plan on coming back at 1:00 for Doug's presentation.

We will reconvene promptly at 10:20. Thank you.

BREAK

John Mundinger: I have been asked to make a couple of announcements. The first one came from a member of the audience who requested that particularly during slide presentations, those of you wearing hats would remove them because it's difficult to see. At this point, that request may be a little late because I'm not sure we have any more slide presentations. Secondly, reminding you that published proceedings will be available from this meeting. If you would like to receive a copy of the published proceedings, please put your name and address on the sign-up sheet at the registration desk. We will reconvene back here at 1:00 following lunch for Doug Smith's presentation.

At this point in the session we would like to hear from representatives from several interest groups in the state who have been following the predator management issue in Montana. They may be sharing some prepared comments or they may be responding sharing some comments that are prepared specifically in response to some of the things that they heard from the agency people. For the next 50 minutes, we will hear five presentations from various interest groups in Montana who have a legitimate stake in the predator management issue.

The first of our speakers is Mr. Jim Cross. Jim is the northwest regional director with the Montana Wildlife Federation from Kalispell.

Jim Cross – Montana Wildlife Federation

Thank you. I'm pleased today to be representing Montana Wildlife Federation and the sportspersons of Montana as we talk about predator management in Montana on this particular panel.

I want to use the first few minutes here to share some comments with you. One of them is a little bit of a story that fits in today. It's about the two robins that were over in the Kalispell area and decided the fall was so nice they were going to stay as long as they could. After they consumed all the crab apples, mountain ashberries and other edibles that were there, they decided they better get out and start heading south. So at daybreak they took off, flew long and hard and over-nighted down somewhere there in Idaho, and couldn't find anything to eat, so they continued on in the same manner. Finally on about the third day, they ended up pretty late in the day down there somewhere south of Flagstaff. They over-nighted in a big spruce tree and when they woke up the next morning, they looked down and gosh there was a nice lush green meadow there. So they popped down into this meadow and they predated as we heard earlier on the earth worms. Very heavily, they did. In fact after quite a bit of time they decided maybe they'd had enough to eat and maybe they ought to continue their flight to the south. As they spread their wings and tried to lift off, they found out they'd consumed too much. So they decided they'd better rest it off a little bit, and one said to the other "why don't we just sort of wander over here by this fence post and we'll just bask in the sun for awhile until we can get this digested. Then maybe we can get off the ground and continue our journey." So indeed they did. They went over there and laid down, spread their feathers out and let the sun work on them a little bit. While they were there, a big old tom cat came sneaking along there and spied these two robins, and he thought boy this is pretty nice. He snuck up on them and jumped on them and pounced on them, both of them, and he caught them and he ate them up. As he was finishing up the last of the feathers, he wiped off his whiskers and he said, "Boy, there's nothing I like better than baskin' robins."

It's my opinion that the majority of the sportspersons in Montana, through personal experience and reading popular magazines, have at least a very basic understanding of the concepts of habitat and food chains and the predator/prey relationship. I think in general we recognize that the complex and interrelated arrangements of creatures that feed upon one another is a dynamic relationship. And I also think that in appreciation of this unique creation, we strongly support maintaining all the elements in this special relationship of wildlife in their habitats for the benefit and enjoyment of present and future Montanans.

Those sportspersons that responded to my request for views, opinions on predators, predation and predator management still support the role of healthy and diverse habitats as a primary focus for maintaining balanced relationships among predator and prey populations. It is in this idea where we talk about security and vulnerability, and these concerns can become issues. It is in this area that we ponder over access, hiding cover, security cover, thermal cover, forage quality, quantity and availability, and other concerns that can be and often are impacted from human manipulations of habitat.

Now when the situations get into obvious disarray, we are prone too often to look only at the predator populations. Somewhere in my past—I can't recall if it's from Leopold, Oddam, Allen, Trippensea, or some other author—I recall vaguely a hierarchy of concerns in wildlife management where the top priority is habitat, followed by hunting harvest, predation, and then reintroduction of species. So I think that we as sportspersons should not lose sight of the role that habitats can have in this balance of predator and prey relations.

I would also be remiss if I neglected to mention that other sportspersons share their concerns about situations in which habitats have been greatly altered; where adverse environmental conditions severely impacted resident game populations; where uncommon concentrations of several major predators occur; and where they feel opportunities to address the unbalanced predator and prey relationships were employed must less aggressively than they could have been. These sportspersons have learned about the legal obstacles where endangered and threatened species are involved. But that doesn't mean that we can't be dissatisfied, at times, when recovery of severely depressed prey populations is highly desirable and little can be done to bring balance back into the predator/prey relationships except to give up our recreational opportunities.

In these same situations, we're challenged to understand why the extraordinary measures afforded the recovery of the depressed prey populations were not as aggressively applied to the out-of-bounds predator populations, when such measures could have been implemented. These same sportspersons wonder if and how closely major predator population trends are monitored. They believe that the number of predators ought to be regulated based upon prey conditions, and that the considerations for recreational pursuit and the take of both by sportspersons should be part of a management program.

I appreciate the comments that have been presented by the agency panel earlier, and it is from these agencies that we expect leadership in the management of our resources. It's also from these same agencies that we expect to be heard and to be considered as valuable contributors to the management of our wildlife resources.

I think that the questions I have I'd like to hold until we have the open forum, and allow the rest of our speakers to make their presentations. Thank you.

John Mundinger: Thank you, Jim. Our next speaker is Mr. Hank Fischer with the Defenders of Wildlife. Hank's office is located in Missoula. Just as a personal observation about Hank: in recent years there have been several efforts initiated in Montana—one in particular related to forest management on the Flathead Forest, and another one related to grizzly bear introduction in

the Selway-Bitterroot—where rather than taking a more traditional confrontational approach to these kinds of issues, there has been a concerted effort among various interests to get together and work with the agencies and try to take a more collaborative approach. Hank has had a pivotal role in initiating some of those collaborative approaches—the Flathead Common Ground Project, and then also the Selway-Bitterroot Grizzly Bear Project.

Hank Fischer – Defenders of Wildlife

Thanks John. Again, as John mentioned, I work for Defenders of Wildlife. I'm their Northern Rockies representative. Now I want to start out with a disclaimer though, given that there's a lot of outfitters here. Defenders isn't an anti-hunting group; we're not an animals rights group. For doubters I have to issue my standard challenge to any of you private landowners out there who have excellent duck, deer, pheasant populations, I'm happy to come out and give a demonstration anytime you want. I'd also add we're not anti-logging, we're not anti-grazing. But, at the same time, I'd be quick to mention that we are pro-wolf. Our organization has been at the forefront of wolf conservation in this region and around the country, and we don't make any apologies for it.

What I thought I would try to do is to respond to some of the points that I heard people make this morning and give you a little information about some of the work that our group's doing. One of the things that struck me right off the bat that Chris Smith mentioned is these predator/prey issues are very site-specific. I think that's really important; I think it's important for all of us to talk specific places and not generalize too much about predators.

One of the things that comes to mind with me with the Yellowstone wolf situation is that currently wolf range in Yellowstone is pretty much restricted to the Park. Very few packs are spending significant amounts of time outside the Park. By and large the wolf activity is in the Park. This means that we have fewer conflicts. I'm not saying we don't have any conflicts, but it means we have fewer conflicts. Livestock loss levels are below the levels that have been predicted in the Wolf EIS. Total livestock losses in the Yellowstone ecosystem have been lower than in either of the other two wolf recovery areas. This past year we paid slightly over $5,000 in compensation to livestock producers. I'm not meaning to suggest that these livestock losses are insignificant in the Yellowstone area; they are significant to individual producers. But what I would like to emphasize is that there is a system in place and it's working. When wolves kill livestock, the wolves are controlled: they're either killed, they're moved or they're removed to captivity. And in nearly every wolf/livestock conflict we've had in the three ecosystems over the last 10 years, the wolf predation problem has been resolved and the livestock producers have been compensated at market value for their losses. This is precisely what we told livestock producers would happen prior to reintroduction, and we plan to stand by our word.

Defenders has been working mostly with livestock producers, particularly over the past couple of years, to prevent livestock predation from occurring in the first place. Some of the things that we've been up to that you may have heard about: we've shared the cost of buying livestock guarding dogs for a Paradise Valley sheep producer after the Chief Joseph wolf pack killed one of their guard dogs; we've provided horseback riders for Paradise Valley ranchers when the Sheep Mountain wolf pack was close by their stock; we paid the cost of alternate pasture so a Paradise Valley rancher could graze his livestock away from the Sheep Mountain pack. We've

done similar things in Montana in the Nine Mile area, purchasing hay for ranchers so that they could feed their livestock away from areas where wolves were concentrated. We also helped purchase a 'first of its kind' scare device for a Bitterroot Valley rancher to ward off wolves from the area where he was calving. We've done this with grizzly bears also. We've cost-shared with livestock producers to build electric fences to provide secure night pastures for their sheep. Also, we have helped people put electric fences around their bee yards so that we could prevent conflicts that occur when grizzly bears tear up their honey operations.

One of the other things we're involved in and actively supporting here in the next year is research on ways to prevent wolves from killing livestock in the first place. Dr. Dan Pletscher, whom you heard earlier from the University of Montana, is going to test the effectiveness of different techniques such as taste diversions, scare devices and livestock guarding dogs. The point I'm trying to make here is that we are actively involved in trying to find solutions to these problems. I've been at this myself for over 20 years, and frankly I'm tired of the arguing. I'm much more interested in solutions and trying to figure out how we can make this work for all sides.

One of the things that we are doing with wolves that I think is useful is developing a mapping project in northwestern Montana where we're mapping areas of good wolf habitat as well as areas of livestock density. We would like to see the Fish & Wildlife Service focus its recovery efforts on these areas where we expect conflicts will be lower. The idea being it's good for wolves. Wolves get killed because of control actions. It's good for livestock producers because we have fewer wolves in areas where there's lots of cows.

One point I'd really like to emphasize here, I think it's in everyone's interest that for wolves and other large predators on the Endangered Species list, we try to reach recovery goals for these species as quickly as possible. From a conservation standpoint, it means that populations will be secure; it means that they can be removed from the list. From a management standpoint, it means we in Montana will have more flexibility to deal with problems when they do occur. I wanted to support what I heard Glenn Erickson say that the state of Montana says it plans to appoint a committee to develop a state wolf management plan. I think that's an excellent idea. I think that's exactly what needs to happen. Montanans need to get together and forge agreement on how many wolves we want and where they should be located. And we need to find agreement on how to deal with problems when they occur. I don't think these problems are insurmountable. We need to step to the plate and deal with them. We have a lot of controversy, a lot of conversation about wolf issues, but they're not as difficult as many other issues.

I want to speak briefly about the issue of wolf impacts on big game populations because I know the outfitters and guides are justifiably concerned about that. I think one of the things that's difficult, at least it's difficult for me to grasp with this issue, is that for the last 20 years I have been hearing mostly the other side of this equation—that we have too many elk in Yellowstone National Park, and that we must reduce these elk numbers. Obviously, the current management regimen of the state is geared toward reducing elk numbers on the northern range of Yellowstone Park. So, it's somewhat confounding to now see that argument shift, and the suggestion that all of a sudden we have too few elk. It's something that we all need to talk about in terms of what is the right number of elk to have on that range. I think we all recognize that the most significant

predator on elk on the northern range is still humans. Humans are still killing far more elk than wolves.

I want to go back to another point I heard one of the presenters make that complexity is an issue with the wolf—or any predator/prey interaction. One of the issues with the Yellowstone elk that is part of that complexity, is the Yellowstone population is unique because it has so many females in older age classes. Wolves are changing the age structure of this population. We may move from a population that has a lot of older females that may not be reproductive—that's part of the reason why we have low cow-calf ratios—to where we have a population that has many more reproductive age females. Even though we may have plenty of predation on that herd by wolves, it doesn't necessarily mean the herd will decline.

To sum up, I do believe the problems that exist with wolves can be resolved if fair-minded people sit down and seek solutions. The issues surrounding wolves just aren't as difficult as most people make them out. We have far thornier conservation issues than wolves. I finish up by referring back to what I heard Ed Bangs say, that the problem with wolves is they are reflective of people's attitudes and often a substitute for other issues. Wolves can become a target for anger that people feel for the federal government, or they can be a substitute for anger that livestock producers may feel toward an economic system that doesn't always treat them very fairly. I have to make an observation: I'm in the situation with our conservation program where we are frequently paying ranchers for their livestock when killed by wolves. I pay a rancher 80 cents a pound for lamb, and then I go into the grocery store and I look at it and it's $6.99 a pound. It really does make one feel like there's some pretty fierce predators out there. Thank you.

John Mundinger: Thank you, Hank. Our next speaker is Mr. Stan Meyer. Stan has been Chairman of the Montana Fish, Wildlife & Parks Commission for the duration of the Racicot administration.

Stan Meyer – Chairman, Fish, Wildlife & Parks Commission

Thank you John. I appreciate the opportunity to speak and I think that it's a valuable opportunity for us to get together and discuss some very controversial and difficult issues. Montana Fish, Wildlife & Parks Commission is charged statutorily with protecting and managing Montana's wildlife and passing it along intact to the next generation. Secondly, we are charged statutorily with managing it in a way that provides maximum recreation for Montanans. Recreation, I suppose, is defined as being wildlife viewing and hunting, and perhaps just a good feeling to know that up in the Bob Marshall Wilderness there's a full complement of all the animals there today that were there a hundred years ago. That's how I would define recreation.

At the same time, the Fish, Wildlife & Parks Commission exists to provide public input into the management of Montana's wildlife resources. It is from that input that I speak today, because as we have attended season-setting hearings around the state for the last seven years—and there are three other commissioners here today in addition to me—at every hearing where the public

speaks, we hear complaints about the increase in predators and the impact that is having on their lifestyle, and on their opportunity to hunt. With that, we have to respond that the department and the commission are committed to maintaining Montana's tradition of public hunting and abundant wildlife.

For me and for tens of thousands of other Montanans hunting is not sport, it's not recreation, it's not business; a hunter is what I am. It's part of my lifestyle; it's part of my culture. I don't where it came from in my genes, but I am a hunter. I take little joy in the kill, but a great joy in the seeking. I hunted 39 days this fall. Many days I would say I did not fire a shot. I did not have a bad day in the field this fall. I take as much joy in processing the meat and in cooking and preparing the meat as I do in hunting it. It's part of my life. When we feel that that lifestyle is being threatened, that we're in the cusp of losing something of our heritage, something that causes us to live, we're scared. And that's what we hear from people when they come to these season-setting hearings. They're scared that the Montana they have grown up with is not the Montana that's going to be passed along to their kids. And, of course, they're right. I'm reminded of that as Jane and I drove from Great Falls to Billings yesterday. It's a trip that I've made many times in the last more than 40 years. You know, you look at the scenery, the Highwood Mountains, the Little Belts, the Moccasins, the Snowies, the north end of the Crazies, they're all there, they look just the same. It's comforting to see the Judith River is still in its bed, so is the Musselshell, running toward the Missouri. Looks just like it looked 43 years ago the first time I drove it. But today the grain elevators, they're all boarded up. They're empty. Many of the farmsteads are vacant. No smoke coming from the chimney on a cold January morning. The small towns, we know what's happened to most of the small towns. We think of Montana as a big rural state with vast open spaces, and it is geographically. But demographically, Montana has changed dramatically. We are now an urban state. Our people are living in the cities, and it's seldom that you get a very good opportunity to measure the change that has happened in Montana. But one of the examples that I think is important is the November 1998 vote on Initiative 137. I-137 didn't have a thing to do with hunting, or trapping, or wildlife; rather, it was the proposal that would ban new cyanide heap leaching in hardrock mining in Montana. That was I-137; it was a hard fought battle. I-137 failed in two-thirds of Montana's counties. In 37 counties it failed. In 19 counties, one-third of the counties in Montana, it passed. And the final result, of course, was the passing of the initiative 52 to 48. I-137 passed in the major population centers—Yellowstone and Gallatin counties which generally vote Republican passed I-137. Cascade and Missoula counties which generally vote Democrat passed I-137. That demonstrates to me the conflict that is growing, and as Montana becomes more urban, we will see more and more of this type of thing. That's what makes the predator issue so difficult.

Montana has abundant wildlife because hunters, common folk, people who are here and people who are deceased, have bought hunting and fishing licenses and they've bought and paid excise taxes on hunting gear and ammunition for all these years; they've lobbied for professional management of our wildlife resources. The people who send you the e-mails about not killing those two grizzlies, Ed, they are the same people who are calling for my removal because I don't get tough enough trapping regulations pushed through the Commission. Those are the folks who've not contributed one dime to wildlife management or to habitat in Montana. They're in Los Angeles, they're in Philadelphia, and predator management and wildlife management is coming down to a political issue. It's coming down to who can send the most e-mails. And I

know who can send the most e-mails and it ain't Montana hunters and trappers. It's out-of-staters, and this is the difficult thing to deal with.

I also want to say that I love to see predators. I love the mountain lion as much as I love its prey. But I'm concerned about how many white-tailed deer it takes to produce a 150 pound male mountain lion; and how many hunters and how many supporters of wildlife habitat we're going to lose as deer license purchases decline. And that's the situation we're in. I'm not watching the watches. Are you John? (3 minutes) Thank you.

Jane and I have contributed significant personal resources to supporting grizzly bear habitat on the Rocky Mountain front. It's a thrill to see grizzly bears. And while I oppose the reintroduction of the Yellowstone wolves, I've stood down the Lamar Valley and shivered in a June blizzard in the hopes of seeing a wolf. It's exciting stuff. But we have to have a balance. We have to have management of the predators. We have to have a commitment from all parties to try to maintain this cultural lifestyle that is so important, not only to Montanans who hunt but to the wildlife, because we support the habitat, and we support the wildlife; and we have for many years.

I would like to see a grizzly management plan begun on the northern ecosystem. Folks in the department tell me we probably have as many grizzly bears in the Rocky Mountain area in the northern ecosystem as we've had any time in the 1900's. But I go to a meeting of outfitters and I hear a Forest Service employee ask if they would please report when they see grizzly sows with cubs because they're trying to get some population data. That's nice, but that anecdotal stuff isn't gonna stand up in court. We need the funding and we need the commitment to start the de-listing process on the grizzlies in northern Montana as well.

I want to conclude with a comment or two on economics. Seven years ago a southeastern Montana landowner and outfitter told me that he was lobbying for a specific season; that a 4-point muley buck was worth as much as his best steer calf. Today I suspect that that 4-point muley buck is worth four or five times as much as his best steer calf. Under those circumstances, perhaps predator control will make some economic sense. On the other hand, at Fish, Wildlife & Parks, when we sell a deer license we get $13 for it. Do you get the point? It's a matter of economics and it's a matter of deciding what's it worth to preserve a lifestyle and a culture that all the world seems to want to come to Montana and participate in; but then they want to bite off a piece of it and just keep it for themselves, and you know the rest of the story, and thank heavens I'm out of time. Thank you very much.

John Mundinger: Thank you, Stan. Our next speaker is Jack Rich. He's representing the Montana Outfitters and Guides Association. Jack operates his business out of Seeley Lake.

Jack Rich – Montana Outfitters and Guides Association

Yehaw. They didn't tell me that I was going to have to follow that kind of act. It would suffice to say that in the industry I'm in we support many of Stan's comments and we appreciate his ability to convey them to this group.

I was asked to give the outfitter's perspective on this issue which is a controversial issue, and at first I kind of said why me because I figure that in this position you are somewhat like the lieutenant in a military ground campaign. They always say lieutenants are the expendable ones. They're out on point and they're the ones that drop like flies, and they just have this endless chain of lieutenants to come back into replace. But then I looked a little deeper and I said well maybe it's because I've got a deep commitment to Montana. My family came here some 100 plus years ago, we've made our living off the land, and off the natural resources. My father became an outfitter at the end of World War II. Ironically, my great-grandfather guided hunters in Yellowstone Park before it was a park by the way. And so we do have some deep deep roots in this land, and I do have a deep conviction for Montana and its people and my lifestyle as an outfitter. So I stepped up to the plate and I guess I would have to say that I'm also wearing those two hats—I'm wearing the hat of an outfitter and a small businessman, and I'm also wearing the hat of a Montana resident and a person who lives in rural Montana. It goes without saying for those of us that live in the rural landscape that we've seen some pretty dramatic changes in the last 30 years with regards to wildlife management. We saw a time 30 years ago that a lot of these agency people have referred to when there were liberal seasons on predators; when predators were basically considered a threat to safety and competition to livestock, and recreational and subsistence hunting; and their numbers were held down to little or nothing. We've seen that change now to where there's this growing predator population and the dynamics of the wildlife have changed dramatically in that course of time. In the process of that we still have some things that we look forward to and I guess—somebody mentioned fear and fear is real—there are a lot of us in the outfitting industry that live in the rural communities that are afraid. We see things we're losing and we're losing them at a rapid pace. One of the first things we lose is a feeling of safety and comfort. When they talked about Lewis & Clark shooting the grizzly bears, the first time they shot one it was kind of for sport. After that, they were scared of them. There was a confrontational feeling in the air. The same applies toward the mountain lion and the wolf. There's a fear in there. Some real, some perceived, but it is there. When you're raising a family like I am, out where the people meet the wilds, it's a fearful thing. When it used to be you'd tell your kids, "go out and play in that tree fort," now you're saying, "boy, don't go out there unless I'm sitting there on the porch with some sort of defensive mechanism to make sure you're not pursued by a predator." And it isn't just the rural landscape. We saw in the paper yesterday, it was in Missoula in one of our urban areas. So, that's a real fear and it's a loss of opportunity to feel safe outdoors.

There's a loss of opportunity to even be outdoors. We see increasing land use restrictions, especially on public lands and as it pertains to threatened and endangered species, and some of what we perceive as government intrusion into our right to be on the land. For me as an outfitter—some people would refer to us as those greedy self-serving outfitters—I prefer to think of myself as someone who's able to make a living using some of Montana's natural resources, and I'm proud of that heritage. That economic viability is being threatened with continuing regulations, both land use and in the way that the wildlife is being managed, we feel our livelihood being threatened, too. And it's not a comforting thought. Looking down the road, the

picture doesn't look all that rosy for us. We see that there are still those people—and it was interesting to see that map on the board of the places where they are considering wolf reintroduction; there should have been a corresponding map with highlighted areas with the broadest support for the addition of wolf reintroduction, and that would have pointed out all of the population centers of the United States. And that doesn't mean that we don't support a balance of wildlife which includes wolves and grizzly bears. We're just concerned that in the process we are creating this ever-enlarging glass bubble of which man stands on the outside and the animals are on the inside, and we are strictly observers and we are not participating, as Stan would say, in the interaction of hunting and camping, and fishing, and living on the landscape. In light of that, I'd like to challenge those agency people to develop a broader perspective and to recognize that in the last 30 years the wildlife dynamics have changed, and that it is threatening a rural lifestyle that we hold near and dear to our hearts; and a rural economy that is crumbling by the wayside; and that we need to drop the parameters when it comes to wildlife management and find a way to be more responsive and not run behind the "eight-ball."

An analogy I would paint is that if we treated the rest of our economy the way we're treating some of our wildlife management now, we would hear every few years someone equivalent to Alan Greenspan stand up and say, "the economy's in turmoil, we're gonna raise the interest rate 20 percent." Everyone knows what that would do to our economy from a national standpoint. It's my contention that we're living behind the curve with regards to wildlife management in that same kind of scenario. We're in crisis management and we wait too long to make decisions where local economies and safety and ability to use the landscape is being threatened and lost. And my feeling sometimes, maybe lost in a way we'll never get it back. Although Stan made reference to the fact that we need more professional dollars on the ground and I strongly support that, I think they're missing a key component in being able to tap into the vast knowledge that sits out in rural Montana, be it from the outfitters and guides, from the sportsmen that are out there in the field, from trappers who spend days and days out there. There's a vast amount of knowledge, and not to be insulting, but you don't need a Ph.D. to see some of those things. I hope we can find that common ground and I hope we can pass on a solid future, wildlife heritage and ability to work and live on the land in this great state of Montana. Thank you.

John Mundinger: Thank you, Jack. Our final speaker in this panel is Mr. Bruce Malcolm. Bruce is substituting for Bruce Tutvedt as the representative for the Montana Stockgrowers Association. Bruce is a rancher and an outfitter from Emigrant, Montana.

Bruce Malcolm – Montana Stockgrowers Association

Thank you. I always have trouble with mikes. Can you hear me in the back? (Yes) Okay. First of all for those of you who don't know me, I am Bruce Malcolm, and my ancestors came to Paradise Valley almost a hundred years ago. My wife's ancestors established the first permanent ranch in Paradise Valley. My wife, Connie, and I have been in the cow/calf operation all of our lives, either on our folks' place until after we got married and got our own. We established and operated an outfitting business for the last 25 years. I've served as the Conservation District Supervisor for 30 years. I didn't know I was that old.

The observation and study of natural resources and wildlife have necessarily been a way of life for us. Unfortunately, I've seen Paradise Valley transformed from a game-rich valley to a valley of predators. Montana is the home of a number of predators that have an impact on the ranching industry. Today, however, most of my remarks will concern our newest predator in the mountains of southern Montana and that's the wolf. I did not come today to renew or debate the arguments of the pros and cons of wolf introduction. I'm here today just to give you an update from a rancher's viewpoint of some of the facts about wolf activity on our ranches and some observations about wildlife. I'm here today as someone who lives with the impacts of predators everyday.

In our area, there have been several documented wolf-related livestock losses this past summer and fall; however and more importantly, there have also been a whole lot of losses that cannot be documented. This is one of the biggest problems that we face. The problem with documenting losses is that you have to have proof that the wolf killed the animal. One of the characteristics of a wolf kill is that there is no evidence. We had a calf loss in June. We saw the calf in the morning; the cows broke through the fence, got into the yard that night; we went out to see what was wrong the next morning, and what we found was a skull, a neck bone and an ear tag. No feet, no hide, no meat, nothing. No way to prove that that was a wolf loss.

I have seen bear, lion and coyote kills, and in each case a part of the carcass is left. Several cases this summer, the only part of a calf that was left was the skull, the neck bone and maybe a foot, like I said before. No meat, no hide, and all gone within one day. My personal observation, this is going to have to be what we document wolf kills with, not the bite. This means that there's no formal verification of a kill and, therefore, no opportunity for reimbursement.

Several ranchers in my area have reported an additional three to six calves missing this fall. It was not a year for lightening. We didn't have enough moisture to raise any poison, and disease is pretty much under control these days. So, we can kind of rule those out. If these losses were due to other predators, we'd find some carcass. But we're finding nothing. Only the wolves leave no evidence. I realize that this is not provable, but we've got to operate this way because this is what the circumstances and evidence point to. This is what we need to start recognizing. This is some of the common ground we ought to be lookin' at.

Another important factor that's having a real impact but is difficult to measure is stress. And I use big capital letters on STRESS. Stress to animals and ranchers. These animals that have been chased are scared. You almost have to be around it to understand it. You as a person cannot scare a cow as bad as these wolves are. Cows that have been run from one to two miles exhibit blood running out their noses, cuts and bruises on their hind feet and legs. Cows—and this is another characteristic I think we're going to find as ranchers of wolves chasing cows—have developed a deep fear of the ranch cow dog. The cow dog that normally goes with you to feed cows or goes with you to move cows can walk amongst the cows, as many of your know, without hardly interrupting their grazing. After the wolf gets after them, when that cow dog jumps out of the truck, those cows are gone, fence or no fence. Last winter we had an incident where I had 13 old bulls, four miles from home. One day the neighbors said, "your bulls aren't in your pasture any more." So I went down there to check it out. My cow dog, who normally

goes with me and walks around with the bulls, jumped out of the pickup. Those bulls took one look at that dog, and I could not stop those bulls until I got them in a neighbor's corral, three miles away. They ran the whole distance. It just doesn't make any sense for an old mature bull to run three miles. Of course, five fences and a couple of days later, I finally get things back to normal. No evidence. There was frost on the ground. All they could find was the beef bull tracks on the ground. The ground was frozen and there was no evidence of a bear, so you know we just can't prove those things. But the finger points toward the wolf, 'cause the grizzly bear's hibernatin'.

Ranchers' stress is brought on by the presence of wolves, not only in strictly economic loss but in extra labor to gather cows scattered by wolves, mending fences torn down by cows being chased by wolves, and getting up at 4:00 in the morning to go on wolf watches. We were told that wolves kill between 4:00 and daylight, so after we lost our second calf in the meadow between our house and the highway, we got up at 4:00 every morning for a couple of weeks and went out and sat with the heifer calves so we didn't lose any more calves. I don't mind doing it so much in the winter time when I get a calf land I can see something comin'. And our children are afraid to be outside after dark. They are scared—tears come to their eyes. I'm not trying to be emotional but this is the real situation. A lot of us have those, especially the young children. I think Jack touched on this. They're just scared. I don't think this is right for us to have to put up with this thing.

Up to this point, the ranchers are bearing the brunt of the impacts of this new predator. We are in a situation where we are simply powerless. The right to protect our property has been taken away. Where are we going to go from here? I would like to share some observations. It seems to me there is not enough area in Yellowstone Park suitable to establish more packs. That leaves the area around the park, the greater Yellowstone ecosystem, to establish these packs. Most of this federal land outside the Park is at a high elevation where deep snow and long harsh winters do not support prey for wolves. That leaves only the valleys in the middle of ranching operations and the communities. Conflict and controversy is inevitable in these areas. With the projected increase in wolf numbers in the next few years and the factors I have mentioned, it is clear we are headed for one of the greatest wildlife management train wrecks we have ever seen.

There is no book on resource management in spite of what we've heard. Common sense must prevail. The future will be decided by trial and error, but for that to work we must have the ability to react to those errors and make changes. Currently our ability to make necessary changes is quite restricted and our access to the facts seems restricted too. We need to have the truth, we need to have it promptly, and we need to have it accurate. Good decisions can only be made when based on good, factual information. With that information, we must work together to find a solution that we all can live with. Ranchers and landowners are not demanding the right to kill every wolf and predator they see. They recognize the importance of the balance of nature, and only ask that the rights of individuals and the livestock industry be considered in this equation. Thank you.

John Mundinger: Thank you, Bruce. We have about 45 minutes between now and lunch. The next session of the symposium is intended to be a dialog between our two panels wherein the

public interest panelists may pose questions to the agency panelists. Following lunch and Doug Smith's wolf talk, we will open the mics specifically for taking some questions from the floor. At this time, generally I would just turn the mic over to the members from the public interest panel to pose some specific questions to the agency panel; and I would request that you come to the mic to pose your question, and likewise the members of the agency panel to come back to the mic with your response.

Jim, you indicated you've got some questions. Do you want to lead us off?

Q. Jim Cross

I guess I have a concern that I didn't hear the word environment or habitat or anything like that mentioned, or the talk about alternative prey species. I think that Fish, Wildlife & Parks is an agency that has long and strongly supported the rule of habitat in wildlife management, and yet when we get to talking about predators I didn't get that connection. I guess I'm concerned we're focusing only on the specific predator/prey relationship and not on the total arena of predators and prey. While we can effect on a short-term basis economic gain by reducing coyotes, say, as Mr. Newell talked about, is that an economic venture over the long term? We didn't talk about anything other than rabbit populations. How about voles, mice, small birds, and other things that coyotes might prefer in addition to calves and fawns. So, I guess I'd like to have somebody address the issue of what happened to the discussion of habitat in this complex arrangement of predators and prey. I imagine Glenn Erickson who is the Bureau Chief would be the best person to address that issue.

R. Glenn Erickson

Well, I think that's a good point, Jim. The habitat issue is a primary one that I think we need to address. I think Jay brought it out a little bit in the fact that 530 evidently has a lot higher ratios of fawn per adults just normally because of the habitat condition. Obviously, these populations that are responding to what's there as far as food and cover, etc. and their recovery rates including how fast they recover and how quickly they decline for that matter, is all related to the habitat feature.

One of the biggest issues I think we have concerning predation and it relates to some of the safety issues mentioned earlier with lions, is a lot of the habitat lions are using and perhaps even wolves with the flatlands they are going to, is where people are at. Where we are subdividing and moving into these new areas and even though we are not removing all the habitat situations, the animals tend to either be removed by our use or they are attracted there and cause safety concerns. I think we're just as much a problem as the issue with the predators in that the habitat is being impacted by humans and we're removing a lot of that from the use that used to be there by the predators and the prey. So I think it's important and it's probably the driving force behind a lot of the situations we see where we have populations decline because of weather conditions, sometimes that's related to the habitat condition. In fact most of the time it is. A population can survive something like that a lot better when it's got good habitat conditions and we all need to work toward that. I don't know if that answers it, but I think it's important. No doubt about it.

John Mundinger: With that question, I wonder if it might be appropriate to get a brief response from both Ed and Chris as to how habitat fits in with the wolf recovery plan and with the grizzly bear recovery plan. Either one of you want to lead off on that?

R. Ed Bangs

On wolves, throughout the world the two mammals with the most natural distribution worldwide are wolves and people. That's having a social structure and a family that takes care of each other. What that means for wolves, is wolves can live anywhere. Wolves were common everywhere in North America north of Mexico City. So, habitat as such just needs to have prey for wolves. Ultimately, wolf distribution is solely going to be determined by people. As a society we will determine where wolves live and where they don't. And we'll do that by killing wolves. We just simply won't allow them to live in some areas. So habitat, per se, is not really the issue as much with wolves. There's plenty of public lands to support a recovered wolf population in the western U.S. easily. It's going to be social tolerance that determines where wolves live.

R. Chris Servheen

With grizzly bears, the habitat is out there for the bears for the most part—spring, summer, fall and denning habitat. Whether the bears can use it or not is based on human activity. So what we try to do is balance the needs of people with the needs of bears in managing habitat, providing habitat security for bears, and allowing them to use the habitat that's out there. Habitat is a critical issue for grizzly bears because humans are the main determinant of where bears can be on the ground, unlike wolves, where prey is the main determinant for the distribution of wolves. Eighty percent of the grizzly bear's diet is vegetation and insects so a wide variety of foods are critical to bears as is the ability to use those foods without disturbance from people.

Q. Hank Fischer

It seems to me that the predator control programs that are mostly controversial are the ones that are government-sponsored. Particularly, control programs that involve what we think of as non-fair chase things like helicopters and airplanes. So my question is whether or not it is possible to maintain effective management of predators in Montana using more traditional ways like we've done with mountain lions; that is using hunting and trapping seasons to manage populations. It seems to me that's more the level where we find acceptability of predator management as opposed to government-control programs.

R. Ed Bangs

I'll take a quick shot at that. If you look at how wolves are managed in Canada or Alaska, a big part of their management involves public harvest programs, and a defense of life and

property program. I think in Montana right now if you see a mountain lion chasing your calf, I think you can kill it. Then you have to report it within a certain amount of time. The recommendation in the EIS is once wolves recover and are delisted, we fully envision there will be a defense life and property law where wolves are managed pretty much like mountain lions and a public harvest program. It has been my experience in Alaska and talking with Canadians, that this makes wolves a lot more acceptable. What's sticking in everybody's craw right now is that a lot of people perceive this as being shoved down their throat by a bunch of easterners, and they perceive they've been treated unfairly.

I've a firm belief that the best long-term plan for wolf management is in the hands of the states or the tribes, and that would include public harvest. That's cheaper in the long run. You don't need an agency guy running out there if the landowner can just handle the problem himself. We're trying to move toward that. The difficult part is in the interim where you have an animal that's pretty new and a lot of people are very excited about it. Once wolves become more common, they won't be any different than black bears or mountain lions.

Hank Fischer

One comment I'd like to make about the grumbling I heard when the comment was made that these were easterners who shoved predators down our throats in Montana. I have to say in fairness, that's not the truth. If you look at the hearings we had in Montana on wolf restoration, there are many Montanans that support predator restoration as well. The only point I want to make is I do think it's important for people to recognize that there are many many people in Montana—we can have a great debate about whether it's a majority or not—who do support conservation of large predators. I'm sure many in this room do.

John Mundinger: Do any of the other agency panelists want to respond to the question of public harvest?

R. Glenn Erickson

I think in Montana there's a strong support for hunting and instituting that as a control for predators, etc. I guess I have a fear based on what we've seen so far in Minnesota and some other places where wolves are at high numbers and delisting is being considered, as to whether the general public on a national scale will accept hunting of wolves and allow it to proceed even though the states want to do that. So, even though there's a lot of talk about providing trapping and hunting of wolves in the future in Montana, or anywhere else, I think the actual implementation of that is going to be much more difficult. If you look at Alaska and some of the other places where wolves are present and hunting does occur, there is extreme conflict and emotion over the hunting seasons and the way they are implemented. I don't think it's a panacea; I think that's something the state of Montana would support and promote to have in a management plan, but a question I would have for Hank is whether his organization would support hunting in a management plan for wolves in the future once this species is delisted.

R. Hank Fischer

Again, I think the whole issue is once we get the delisting it will become a state decision on whether or not we have hunting and trapping seasons on wolves, or any other listed species. That is something that's controversial and will be argued about, but I look at the mountain lion program in Montana and I do think it has been successful at balancing some of the conflicting needs. I see a wolf program could parallel that.

Q. Jack Rich

I have two questions. One that I would like to have Chris Servheen answer, followed by one that I'd like to have the Fish, Wildlife & Parks folks answer. In living there in the Continental Divide ecosystem—we live right next to the grizzly bears—it's our understanding in talking with state and federal biologists that grizzly bear numbers are right where we want them to be on recovery numbers. One of the concerns is that the mortality numbers are too high. It is our rebuttal that mortality numbers were established on a lower population than what we have now. As an example, last year the Fish and Game documented two grizzly bears down in the Blackfoot valley that interfaced with people; this year they documented 17. Confrontation is inevitable when those kind of numbers start showing up. If it kicks over the mortality guidelines, we're in a 'catch-22.'

The second thing we hear is that even though the population numbers have recovered in both the northern Continental Divide ecosystem and the greater Yellowstone ecosystem, on a broader scale the gene pool is too small and we're still in trouble.

R. Chris Servheen

The first one related to population numbers and mortality, we have a big difference in what we know about grizzly bears in the Yellowstone ecosystem in terms of numbers and population trends—whether the population is increasing or not—and grizzly bears in the northern Continental Divide ecosystem. The northern Continental is the Bob Marshall, Glacier Park complex. We know a lot about what's going on in Yellowstone because we've had intensive funded research with people who do nothing but monitor the bears in this area, and it's been under way for more than 27 years. Because of that we know we have a population that's increasing; we know we have 400 to 600+ bears in the Yellowstone ecosystem; we know there are 200 cubs that have been born in the past three years. We do not have a program in the northern Continental Divide system because we do not have a funded, monitoring program in place there. The real reason we don't have it is that kind of program was put in place when the grizzly bear was listed in Yellowstone because Yellowstone was the big interest place for grizzly bears. Everyone that knew about grizzly bears, and Congress and various agencies all focused their efforts on Yellowstone, so they funded this big long-term research program which gives us what we have today.

But there was no such funded program in the northern Continental Divide system. So we don't know whether that system is increasing at a certain rate, and we can't tell you how many cubs were born; and we can't tell you with anywhere near the precision we can in Yellowstone how many bears are in that area. That's a big problem for us and an area of great concern because we feel in many areas in the northern Continental Divide that the bear populations are indeed increasing, especially on the Rocky Mountain Front. Essentially, the bears have re-occupied the Rocky Mountain Front from the Canadian line to Highway 200. Twenty-five or 30 yeas ago there were hardly any bears out on the Rocky Mountain Front. Now there's probably 80+ grizzly bears that live there from the Blackfoot Indian Reservation down through Choteau and Augusta, all the way down to Highway 200. Now we are seeing bears in the Ovando area starting to occupy that country. But because we don't have the funding to put together some kind of monitoring program to quantitatively say what's happening with that population, we are in a weak position. This is an area of great concern to us. I wish I had a solution for you. The solution is going to have to come from some kind of funding that will give us the money to get the data. I've been pounding the table for a long time to get this issue supported.

The second issue is the issue of genetics of grizzly bears. It is a complex issue and I'll try and summarize it very briefly for you. Yellowstone used to be connected to all the other ecosystems, and Yellowstone is now an island population. It's been an island for probably 80 years. Because of that we have a little bit less genetic diversity in Yellowstone than we have in the other populations, as you get with any isolated population. It's not at the level of low diversity that we're worried the bears are going to have some kind of problem, and we've never seen any genetic problems or inbreeding problems with the Yellowstone bears. But, there are ways we can minimize that kind of thing by putting bears into the Yellowstone from other areas. We only need to put one or two bears in, just to get some animals into the breeding pool, essentially. We can move a male and males breed regularly with lots of different females, and if one male got into the breeding pool every year or two, that may be enough to eliminate the concern about genetics. In fact, I was just talking yesterday with an academic geneticist about this issue trying to decide how many bears we'd have to put in and how often to minimize this threat to the genetics of the Yellowstone population. I think it's a manageable problem; I don't think it's a big problem. Our other populations that are contiguous with Canada like the northern Continental Divide, we don't have genetic concerns, because those populations are contiguous and continuous all the way up the Rocky Mountains into British Columbia.

Our big problem is this funding issue and monitoring bears in the northern Continental Divide system and we frankly do not have the money to gather the data and show what's going on in that population.

Q. Jack Rich

Just as a brief follow-up to that, Chris, I think the people who live in the Flathead Valley, the Rocky Mountain Front, and the Blackfoot Valley, with no funding necessary, would be glad to help you with some of those population counts that in our back yards. And that doesn't

mean we don't support you if funding is necessary to get the job completed. There's some support for that too.

My question for the Fish and Game agency would be what I perceive as where the rubber meets the road. We have an issue and a situation developing in the Gardiner area in the northern Yellowstone elk herd where there are conflicting viewpoints on what's happening there. You heard some of that with stockmen and you've heard it in the press through the outfitters and other residents who live there. The official report from the agency is that there is inconclusive data to make some kind of wildlife management decision. Those people who enjoy hunting and harvesting the wildlife there feel there is a serious situation and they want to know what's going to happen. Is the Fish and Game going to take an action plan before you have to raise the hunting fees 20 percent? If there is an action plan, is the action plan going to involve reduction of predators, including wolves? Or is it going to involve reduction of hunting opportunity? I think it needs to be answered and I think timeliness is important.

R. Glenn Erickson

The state is concerned. We have stepped up our monitoring of the upper Yellowstone. We have had some assistance from the Rocky Mountain Elk Foundation. We have met with the Park Service and the people that are working on the wolf management there in the Park to coordinate our efforts so we can come up with the same data they are coming up with, as far as calf production, etc.

As I said before, we just conducted a survey of that northern Yellowstone elk herd just recently, and it was at 14,500 which is about 10 percent above what it was last year. That doesn't count what the hunt will take this year. The calf production was running around 17 per 100 cows. So, we are monitoring that; we are trying to document what's happening; we are utilizing the information we get from the other agencies on the distribution of wolves and where they're at, and we are going to correlate that with what we are finding.

As far as the management and control of predators, the state of Montana really has no authority to control the wolves at this point, without an approved management plan from the Fish & Wildlife Service. We are going to start a management plan process here to be completed by 2001; however, that plan is for after the wolf is delisted. Any control of the wolves will be handled by the Service, since at this point the state has no authority to do that.

Q. Bruce Malcolm

I have a question for Chris. When do you project that the grizzly in the Yellowstone area would be delisted? I'm known for being a little blunt. I just need a date.

R. Chris Servheen

If I had a dollar for every time I was asked that question, I'd be a rich man. First thing I want to say is it's not in my control when it's going to be delisted. I would foresee that we are going to have everything done at the federal level probably in another year to year-and-a-half. The state of Montana has to do some things as well, as well as the state of Wyoming and the state of Idaho. It's a team effort to get everything done. We're probably lookin' at four years until the proposal is made to change the status. As I said, the management of the grizzly bear isn't going to change that much. It's just going to be run by different folks.

Q. Bruce Malcolm

The difference might mean we don't get a federal fine for protecting ourselves. I have a comment kind of directed here at Hank. You don't have to answer this. This is just my viewpoint on the predator control. Hank has said something about how much he's done and so forth, but when it comes right down to the rancher's viewpoint it's a case where one rancher lost five calves, probably most obviously to wolves. That rancher got paid for a calf and a half. I'm not sure where the other half calf is, but... Another rancher lost a cow. The biologists were called in. It was probably a wolf kill but can't prove it. No return. I think this is one of the things that we need to get ironed out; that we don't need to have such absolute proof as a bruise to a bite to prove that it was a wolf kill.

R. Hank Fischer

I'll just make it quick. When you administer a program like a compensation program where you're trying to balance paying for real losses—you want to pay money to people who lose livestock to wolves, but you don't want to pay for livestock that weren't killed by wolves—we rely on wildlife services to verify losses. We have responded to rancher concerns about that verification process by setting up a secondary category where there isn't absolute information but there's probable information, we pay at a 50 percent rate. We can't just pay when somebody says, "I'm 10 cows short this year, it must've been wolves." I think it is unrealistic to expect that we would pay for that.

Q. Jim Cross

This pertains to the wolves in the northwest part of Montana, and the fact that they've been there for approaching 20 years now and we've fluctuated somewhere around the six to eight pack level for 10 years; we've had a change of emphasis in management of public lands, timbered lands, and we're not sure how that's going to affect the recovery of prey base; I guess my question to you is: what happens if we cannot reach the 10-pack level that's projected for recovery and delisting in northwest Montana. Also we want to bring in Mr. Fischer's discussion about the mapping of suitable habitat. From what I understand about the wolves, there's no doubt in my mind they have visited and frequented those flatland areas in northwest Montana at sometime in the last 20 years, and whether or not they have elected to stay there appears to be related somewhat to prey availability. Mr. Bangs, what happens if we continue in this mode of six, seven or eight packs and never reach our recovery level, and we have a change of emphasis on prey availability.

R. Ed Bangs

The original recovery plan said there would be 10 breeding pair in each of the three recovery areas—northwestern Montana, central Idaho, and Yellowstone—for three successive years. I think what we've seen in northwestern Montana was wolf populations were doing great (I think in '96 we had like eight or nine breeding pair), and all of a sudden that bad winter just hammered those whitetail. Wolves didn't have that much to eat; I ended up ordering to kill a lot of wolves for depredating livestock; and now we're down to six breeding pair. The state of Montana actually brought this question up several years ago. Isn't 30 breeding pair over these three states just the same as 10, 10, and 10, but we won't have to worry about preventing delisting by only having eight or nine breeding pair in northwestern Montana. And the Service looked at that, and said "ah, it makes sense to us." So right now the Service is talking about proposing to delist when we have 30 breeding pair for three successive years distributed throughout Montana, Idaho, and Wyoming. It's also important to point out that during the delisting process it will be open to public comment for an extended period of time, scientists have a chance to comment on that, it goes through a public process and gets a lot of public involvement. Right now, I do not see delisting being held up solely because of there only being eight breeding pair in northwestern Montana.

Q. Stan Meyer

My question, as you might guess, is related to maintaining hunter opportunity. In the development of the wolf management plan and the grizzly management plan, what importance will the federal agency give to maintaining historic hunter opportunity for the prey species—the deer and the elk? I think it also applies to grizzly bear as we believe that grizzlies are a principle predator on elk calves. It relates to my earlier remarks. What emphasis do you put on maintaining hunter opportunity?

R. Chris Servheen

A quick answer to that is in the Yellowstone ecosystem grizzly bears do kill elk calves during a real narrow time period. Some bears do; most bears don't. Some bears specialize in that. And grizzly bears can also kill elk later on after the rut when bulls are injured. Any weak animals are subject to prey, but grizzly bears are pretty ineffective predators, and they don't kill very many elk in the Yellowstone ecosystem. In terms of our management of grizzly bears, we haven't spent a lot of time on the impacts of grizzly bears on elk populations because it appears to be pretty minimal at this time. But we are certainly not trying to impact in any way the levels of hunting related to elk with grizzly bears because the majority of their food is not elk. We don't think it's a major impact on the elk population in this area or anywhere else.

R. Ed Bangs

As I said before, the Fish & Wildlife Service has a lot of interest with state fish and wildlife agencies and in public hunting. We manage waterfowl seasons, are involved in hunting in refuges, and a lot of things. One of the main issues of concern with people was how a recovered wolf population would impact ungulates. We have spent easily over a million dollars to look at the impact of wolves on whitetail deer, moose, and elk. We've put a lot of money into it to get good information to help manage wolves. In the experimental rules there is a provision for what if wolves start impacting ungulates, how are we going to handle that. The question is what is an impact on ungulate populations? In our rule we wrote a provision saying let the states tell us what an unacceptable impact is that would trigger wolf relocation. The reason we're talking about relocation is the recovery goal for wolves is going to be a couple hundred wolves maybe per area tops. It's probably not going to have a major impact, but that was an option written into the rule. I think the states are looking at developing a plan. I understand that all states that went out to the public basically just got beat to death from the controversy and they thought, "we'll just let Ed handle this a while longer."

I think if we get in a situation where wolves are dramatically, significantly reducing hunter harvest, I imagine it would be in a very localized area, I'm willing to throw out looking at relocating wolves. In the interim, the Service takes it very seriously, has built in mechanisms to do that, we've conducted research to find that out. If we're looking at a minor decrease in hunter tags while wolves are listed, I do not see the Fish & Wildlife Service moving wolves to resolve that kind of a problem.

R. Dan Pletscher

I want to discuss real briefly the recovery goal for wolves and disagree with one thing that Ed mentioned having to do with the 30 breeding pairs. Right now, the recovery plan calls for at least 10 breeding pairs in each of the three different recovery areas, totaling 30 breeding pairs. I think any of my colleagues who are geneticists would say that's not a lot of breeding pairs to avoid genetic inbreeding problems. That's going to be an issue when it comes to

delisting, especially if there isn't connectivity to larger wolf populations up in Canada. I think it's going to be important to at least maintain the recovery goal of 10 breeding pairs in each of those three recovery areas to increase the probability that the genetic connectivity with larger wolf populations in Canada and all the way to Alaska continues to exist. Without that, I think you'll see a hell of a fight on delisting of wolves.

I'd like to make a couple of other comments based on some of the questions and some of the responses I heard. One is, what you guides and outfitters can potentially do. I don't think this is out of your control. I think you've got a lot to say and to do about predators in Montana and surrounding states. Yes, the demographics have changed. And yes the folks in large urban areas have a huge impact on what's going on right now. That isn't going to change. That sort of thing is going to be with us for an awful long time. Wolves aren't going to be taken out of Yellowstone or central Idaho, or out of northwestern Montana. What we've got to do is we've got to figure out how to make that work. One of the things that's going to have to happen is increased monitoring of prey populations, and that costs money. Another thing that's going to have to happen is when these predator populations reach recovery goals, we're going to have to get them delisted so they can be managed on a more local basis by the state, or perhaps even more local control than that. All of that is going to take money. Chris talked about that earlier.

Back when I was a little bit younger and my back didn't bother me as much as it does now, I used to occasionally play golf. When I used to play golf five years ago, it cost $20 to play 18 holes of golf. Twenty dollars for what—four, five hours, and if it's slow on a Sunday maybe six hours of pleasure. It costs $13 to hunt deer in the state of Montana for five weeks. Now there's something wrong there. That's far too inexpensive. What we have, as Stan so eloquently pointed out, is far too valuable. It's not just sport. These game populations in Montana are a way of life and to maintain them, we're going to have to put more into it than $13 per deer.

I think another big opportunity that you folks have is to support a fee increase for hunting and another is to support a bill pending before Congress right now—and here's a guy you can talk to right in front, Senator Burns—is the Conservation and Reinvestment Act. This is a bill that would take off-shore oil drilling dollars and put it into state wildlife programs. It would be an opportunity for all of those people who buy gasoline or buy petroleum products of any kind around the country to support conservation. They're not paying their fair share right now. This is one way to make them do it that would bring somewhere between $6 and $8 million, and with the state match probably $10 million into wildlife conservation in the state of Montana. If you want more information on the Conservation and Reinvestment Act and what it will do for wildlife—game and nongame—I'd be happy to talk to any of you during lunch or during any of the breaks.

Q. Jim Cross

I guess this is an issue of timeliness in predator management. I'm thinking of the situation in northwest Montana when the winter of 1996 was rather severe on whitetail deer. The Fish, Wildlife & Parks Commission took a rather bold action when they eliminated the total 'either sex' season, resulting in the loss of several thousand recreational opportunities for hunters. I'm not so sure they were equally as aggressive in addressing the predator situation by incrementally creeping up with the number of permits. It almost appears to me that we're trying to manage a predator population independent of the prey base. I think in those situations where it warrants drastic action on behalf of the prey, you should take an equally aggressive approach to managing the predators.

Afternoon Session

John Mundinger: Our next speaker is Doug Smith. For this particular presentation, Doug indicated to me that it will take about 20 minutes, followed by a 10-minute question and answer period specific to his presentation. Then we will do the open mike for the public.

Doug Smith completed his Ph.D. at the University of Nevada, Reno. He's an Ecology, Evolution, Conservation biologist who's had a longstanding interest in wolves and has had prior experience working with Isle Royal Wolf and Moose Project and is now employed with the National Park Service in Yellowstone National Park. He's the Lead Biologist and Project Leader for the Yellowstone Gray Wolf Restoration Project. Douglas Smith.

Introductory Remarks: Thank you very much. I think the most important thing about my talk is they moved it from over lunch to after lunch so I don't disturb any of your meals. I appreciate the opportunity to talk because I think having open communication about wolves in the Yellowstone ecosystem is very important. I know many of you out there; I've had conversations with a lot of you. I notice this morning that people weren't singled out; I won't do that either, but I live in Gardiner, I get my coffee and my newspaper at the Conoco, the Exxon, I see a lot of you folks and I've had some very interesting conversations with you over the years. So it's a great opportunity to come here and to speak about wolves and talk about what's happened and try and keep that conversation moving in an open and factual way. I really very much appreciate the opportunity to have this conversation.

My talk, after introductory comments is going to cover four topics. Some of it is how we do things; how we get the data that we obtain. So, I'm going to talk a little bit about radio collaring. Then I'm going to talk about wolf population dynamics in and near Yellowstone National Park. That's a big effort, a lot of people are involved in it, and I'll try and cover the whole topic. The next thing I'll talk about, which is a big focus of our work besides just wolf population dynamics, is predator prey ecology: how wolves are interacting with the elk primarily and with other kinds of prey as well. And then finally I'll conclude by talking a little bit about some of the work we're doing; about how wolves fit into the ecosystem. Yellowstone is a vast area and there are a number of things that are probably going to change, and I think those are some of the things that

we're talking about this morning; about what kinds of things change. Some of those things we don't like and some of those things we do like, and that's one of those things a top carnivore restored to an ecosystem can do is bring about a lot of change. I think that's a change we're all here to talk about today.

Doug Smith Prepared Remarks

THE YELLOWSTONE WOLVES: THE FIRST FIVE YEARS

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REINTRODUCTION

Transport and Acclimation

Wolf reintroduction in Yellowstone National Park (YNP) began in 1995 when the first group of fourteen wolves were captured and transported from Alberta, Canada and placed in three acclimation pens on Yellowstone's northern range. In 1996, seventeen wolves in four groups were captured and shipped from British Columbia, Canada and placed in four acclimation pens; three pens on the northern range and one pen in the central portion of YNP. Two of the three groups of wolves in 1995 bred in the pens while two of the four groups bred in 1996. Attempts to match breeding females with adult males was made in one case in 1995 and in three cases in 1996. The acclimation period was about 10 weeks, enough time to diminish the wolves' desire to return to Canada.

Release

After the acclimation period, the wolves were released from the pens by leaving the front gate open. In 1995, when a few days passed and no wolves exited the pens, project staff realized that wolves were avoiding the entrance, because it had been used by humans for feeding. For this reason it was decided to remove a pen panel at the back of the pen to facilitate release. This back area of the pen was dubbed the "comfort zone", as this is where wolves paced while held in captivity. It took 0 to 12 days for all the wolves to leave the pens. Post release movements of the wolves were mostly confined to areas around the pens, and all groups settled near their respective pen areas except the Nez Perce Pack (1996). This group of six wolves traveled widely throughout the Yellowstone region alone, or in pairs, after their release. Eventually some members of this pack settled in the Madison-Firehole area of YNP.

POPULATION GROWTH

Wolf Population

The objective of wolf recovery is to reestablish wolves in 3 recovery areas: the Greater Yellowstone Area (GYA), central Idaho, and northwest Montana. Recovery, or delisting, is based on a minimum number of breeding pairs: 10 for each recovery area. A breeding pair is defined as a male and female that survive with at least 2 pups to December 31 of that year. This must occur for 3 successive years. When this criterion is met, wolves will be delisted and managed by the states.

The wolf population in the GYA grew rapidly initially, but in the last year (1999) has stabilized. To date, the Yellowstone region has not produced 10 breeding pairs for any given year. The following are population numbers through December 31 of each year:

- 1995 – 21 wolves in 3 groups (2 breeding pairs)
- 1996 – 52 wolves in 9 groups (4 breeding pairs)
- 1997 – 86 wolves in 8 groups (9 breeding pairs)
- 1998 – 112 wolves in 10 groups (6 breeding pairs)
- 1999 – 117 wolves in 12 groups (8 breeding pairs)

From 1995-1999 wolf pack sizes have ranged from 2 to 24 individuals, but overall have averaged about 10 wolves per pack. In 1999 average pack size was about 9 wolves.

Pup Production

Pups are an important component to wolf recovery. The wolves in Yellowstone continue to reproduce and pup survivorship has been fairly high with the exception of 1999. The following are data showing the number of pups born in the GYA by year:

- 1995 – 9 pups in 2 litters; 8 (89 %) survived through December 31, 1995
- 1996 – 14 pups in 4 litters; 11 (79 %) survived through December 31, 1996
- 1997 – 67 pups in 13 litters; 49 (73 %) survived through December 31, 1997
- 1998 – 44 pups in 10 litters; 36 (82 %) survived through December 31, 1998
- 1999 – 64 pups in 12 litters; 38 (59 %) survived through December 31, 1999

Wolf Age Structure

Currently, about one third of the wolf population in the GYA are pups. The following shows a breakdown of wolf ages by year:

- 1995 – 8 (38 %) adults; 4 (19 %) yearlings; 9 (43 %) pups
- 1996 – 15 (29 %) adults; 15 (29 %) yearlings; 22 (42 %) pups
- 1997 – 22 (26 %) adults; 15 (17 %) yearlings; 49 (57 %) pups
- 1998 – 31 (28 %) adults; 44 (39 %) yearlings; 37 (33 %) pups
- 1999 – 79 (68 %) adults and yearlings; 38 (32 %) pups

Wolf Mortalities

Approximately forty collared wolves died in the GYA from 1995 to 1999. Twenty-five (63 %) of those deaths were human caused while 15 (37 %) of the deaths were considered natural. Factors contributing to natural death inside YNP have been attacks by other wolves over territorial disputes. Human-related deaths inside YNP were all due to vehicles.

WOLF-PREY INTERACTIONS

Approximately ninety percent of wolf diets in the GYA are elk. The other 10 % consists of other ungulates such as deer, moose, and bison. The number of bison killed by wolves has increased since 1995. Most bison kills have been made by the Crystal Creek Pack, which inhabits the Pelican Valley area, and the Nez Perce Pack, which inhabits the Madison-Firehole area in YNP. In the case of Pelican Valley, the area is mostly void of elk during the winter months and it is believed that the wolves have responded to this lack of elk by learning to kill bison.

Sex and Age of Prey

Wolf predation in YNP has been highly selective for calves, old cows, or other animals with some kind of pathology. Bulls are also killed by wolves, but usually later in winter when bull elk are most vulnerable. For 712 wolf kills collected from 1995 through 1999, the proportion of calf, cow, and bull elk, as well as kills not identified, are as follows:

Age Class	Percent Taken By Wolves (Northern Range Only)
Calves	39 %
Cows	29 %
Bulls	18 %
Unknown	14 %

Kill Rates

The Wolf Project annually conducts two 30-day winter studies with one of the primary objectives being determination of wolf kill rate, usually expressed in days between kills. During the 1999 November-December early winter study, wolf packs on YNP's northern range (3 packs) killed an ungulate about every three days. During the 1999 March late winter study the wolf pack kill rate was calculated at about one ungulate killed every two days. It is believed that this difference in kill rate is because during early winter, the prey are, in general, less vulnerable and therefore able to defend and avoid attack from wolves. During late winter the prey are more vulnerable, and as a result, more susceptible to attack by predators. On average over five years of study, wolf packs kill about 9 ungulates during the November-December period (30 days) and about 14 ungulates during the March period (30 days).

ECOSYSTEM BENEFITS OF WOLVES

Scavenger Study

Biologists are just beginning to piece together the effects that wolves are having on other species in the Yellowstone region. A study to examine these effects began in 1998 and is looking at how other species in Yellowstone are affected by wolves returning to the ecosystem. The study, called "Food For The Masses", examines wolf-killed prey from the moment they are killed until essentially nothing is left, to see what species visit these sites and benefit from the carrion. Some preliminary findings are, for instance, that species like ravens and raptors (golden and bald eagles, etc.), and smaller carnivores, such as foxes and wolverines, not only have an added food source, but have that food source potentially available to them year round. Prior to reintroduction, carcasses were only available during late winter in the form of winter kill.

Other Carnivores

Other large carnivores such as the grizzly bear also appear to be benefiting from wolf-killed prey. Field observation has produced data that indicate that grizzly bears tend to "win" over wolves feeding from carcasses. While some smaller carnivores may benefit from wolf kills, this is not so for the coyote, at least on the northern range of Yellowstone. Prior to wolf reintroduction, YNP's coyote population was the densest in North America. Since wolf reintroduction, coyotes have been preyed upon by wolves. Data show that coyote numbers on the northern range have declined as much as 50 %. This may be because wolves can and do kill coyotes "caught" feeding at wolf kills. But because coyotes prey heavily on elk calves, this reduction in coyote numbers also means that predation on elk calves by coyotes may be reduced.

HUMAN BENEFITS OF WOLVES

Public Support

The overwhelming public support of wolf recovery in Yellowstone (and central Idaho) has continued since wolf reintroduction in 1995. Public comments from the "Environmental Impact Statement to Reintroduce the Wolf to Yellowstone National Park and Central Idaho" reveal that over 70 % of the American people want to see wolves returned to these areas. The reasons may differ, but for many, the wolf is seen simply as the ultimate symbol of wildness; something that is important to protect, whether for their children's future, for ethical reasons, or for posterity.

Economic Impacts

Interviews with hotel and restaurant owners in the Yellowstone area have indicated many economic benefits of wolves. Most of these businesses have reported increased visitation and larger profit margins. Wolves have become the premier animal to see in Yellowstone and any sighting will stop traffic.

Viewing Wolves

Because wolves are so shy of humans, it was thought that once they were returned to the Yellowstone area, they would be visible only on occasion. Biologists were shocked to find that they were, in fact, quite visible. So much so, that within the first few years of the wolves' return studies began looking at various aspects of wolf ecology and behavior. This has not been a boon to just the scientific community, but to park visitors as well. Yellowstone is now considered by many to provide the best wolf viewing in the world – about 10,000 visitors each year totaling about 50,000 in all have had the opportunity to view wolves in their natural habitat. The May 1998 issue of National Geographic proclaims wolves to be Yellowstone's new "marquee" animal. The American public, indeed, has received what it has asked for – wolves interacting with their environment in the wilderness of Yellowstone.

Question and Answer Session Specific to Doug Smith's Presentation:

Q. Ray Bartlett – Livingston

Have you done any studies on what damage the wolf does to the elk in terms of distress on the females that are pregnant? In the terms of stress that is done to the calf because of lack of milk of that cow because she's on the run all the time? Has there been any studies concerning this?

Doug: No we have not. Those are very difficult behavioral responses to predation that are hard to quantify. However, my only comment to that is wolves and elk have evolved together for millions of years and elk are accustomed to the predation of wolves and other predators; and I think that all those things you mentioned have worked themselves out through the process of natural selection and the elk are in a position in that regard to deal with those kinds of pressures.

Q. John Hoke – Gardiner

I'm interested if you observed any interactions between the potential prey species of bighorn sheep and wolves.

Doug: We have not documented a kill on bighorn sheep. I am not saying that wolves have not killed bighorn sheep, but we don't expect wolves to prey extensively on the bighorns. Bighorns lately have increased slightly. There's been a lot of problems with their long-term population levels, but we haven't seen them preying a lot on them. Where bighorns have been in the Yellowstone, they still are. Other studies have shown that they've had minimal impact on them and bighorns shift to going up higher to more rugged country. They don't come out in the flats as much, and that pretty much keeps them from being preyed upon by wolves. Wolves have focused themselves so much on elk that if they do take bighorn sheep, which I'm sure they have some, it is occasional and maybe the stray one here and there.

Q. Andy Rostrike – Gardiner

Wasn't one of the conclusions from the Isle Royal Study that predators can keep prey at low numbers for an extended period of time?

Doug: I think that what Isle Royal has demonstrated is that predators play a role, but the wolf itself, without human hunting and other predators, is not as strong an effect as the habitat is. In other words, moose there have fluctuated largely due to the response of the vegetation to the moose browsing, rather than predator pressure. In fact they just had a huge crash because of the severe winter and winter ticks. And wolves have tended to track that population, unlike other systems where there's multiple predators, and that seems to be a more depressing, regulating factor on moose itself. But wolves by themselves, no.

Andy: So predators cannot keep prey populations low for an extended period of time?

Doug: I think in that situation, there are other factors operating; but I think in other situations, they can.

Q. Gene Drynan – Gardiner

I was just wondering, has there been any data collected on where another predator makes a kill and a wolf takes this, so the predator has to go and make another kill because the wolf has taken the food from this other predator? How many do we snowball in other words? How many animals have to die before the wolf is satisfied and the other predator is satisfied? Have we done that?

Doug: No. The short answer is we do not have a study on that. However, we are well aware of the uniqueness of Yellowstone in terms of large carnivores. Dan's talk this morning about the north fork as another area in the lower 48 where there's a variety of carnivores. We are trying to work with the Hornaker Wildlife Institute who is studying cougars; we're trying to work with the Inter-agency Grizzly Bear Study Team who studies grizzly bears and soon black bears, as well as the coyote folks from Yellowstone Ecosystem Studies. We're very interested in how these carnivores interact, and those studies are only about two years old and we don't have results. It appears that wolves are dominant to cougars at kills and grizzly bears are dominant to wolves at kills. But we don't know the cascading effect of that and we hope to be able to figure that out. Thank you very much.

John Mundinger: I would request that the panelists from this morning return to the stage once again. The remainder of the session is yours.

I had five people come to me during the coffee break this morning and indicated they wanted more than a minute or two to speak. I'm curious if you'd like to hear from those people first or if you would like them to follow the same ground rules as the rest of the group.

Majority wanted five people requesting extra time to speak first for maximum of 5 minutes.

Open Microphone Session

James Halfpenny – I'm a hunter. I've been a hunter since the day I was 12 years old and my dad gave me a twenty-two. I've been a licensed guide in the state of Montana, and I have a great interest in carnivores and predators and also in their prey, so I went back to school and picked up one of those Ph.D.'s in carnivore ecology. Also, I'm a small businessman who works earning a living in the Yellowstone ecosystem. A lot of what I do is education dealing with the predators. I serve an educational function in the ecosystem that brings in a great economic boost to the community.

There are a lot of people not represented here today who are part of the economic impact of predators. These are the motel owners, gas station owners, restaurant owners who are taking a secondary income from the predators. To give you an idea, there are five groups that serve an educational ecosystem function here which we surveyed quickly before coming—somewhere between 29 and 35 different and specific programs bringing in seven to 20 people per program for wolf education alone between now and June 21st. That's a huge economic input of dollars. This group of people supports hunting to a great extent, also. Most of them are hunters, although some in all fairness aren't.

We recognize that there are places wolves don't belong. We don't want wolves in downtown Billings or Livingston. In those places where wolves are they have to be controlled. We strongly support, I support, hunting and trapping as a mechanism of control. What I support more than the thought of control is balance. There are a lot of economic concerns within the Yellowstone ecosystem so it bothers me greatly when outfitters I know come up and say "Jim, you know I had clients go home this year without any elk." Whole groups of clients that went home without any elk; that bothers me. But, it also bothers me to think that a lot of the other dollars flowing into the community could be decreased by how we manage wolves. Consequently, as we set up a wolf management committee in the state of Montana—and I strongly believe we need this—we need to consider and balance all the economic concerns within these communities. As that committee is set up, there should be some sort of representation on the committee from outside that is welcome to look at the question of balance.

One of the problems we have as citizens of Montana is to make it work. The wolves are here and we're not going to see them move would be my bet. What we've got to do as a group is get together and make it work. I would urge everybody to look at the question themselves and say how can I help make it work. We'll be there helping at the education end, and the people that run motels and gas stations and so on are also earning dollars on wolves. Thank you.

Nathan Barley – I'm Nathan Barley; I live in Gardiner, Montana. Yet another Gardinerite. I want to thank the group here today and the outfitter and guide association for allowing the opportunity to share my views and comments. I grew up in the upper Yellowstone River valley and I've spent all my life there. That is, of course, the focal point for the elk and wolf

debate, as we know. I've been growing up with a lot of debates having to do with Yellowstone and how many elk there ought to be and how many elk we ought to shoot outside the Park. I graduated from Gardiner High School and got my biological training at Montana State University, bachelors and masters in Science. After a few stints here and there, I settled here in Gardiner and in Montana because I love it and because of the values in terms of wildlife and scenery that Montana possesses.

I currently make my living as a naturalist, a writer and a guide. My guiding is a little different—it is non-harvest, mainly wildlife watching. I do a lot of instructional courses and film work, and I recently produced a National Geographic film about the return of the wolves to Yellowstone. It's a multi-million dollar project and I think that underscores the fact that there are other industries built up around the wolf and predators. Those industries see predator control not as a bonus but would prefer predator control not take place.

I work with many people who are interested in wolves, and as many people have indicated, they are from the east coast and California mainly. So picture my life for a minute: I go out in the Park and visit with people that are from out of state; I'm on the computer hearing a lot of opinions; and then I come home to Gardiner and sit around the pubs and taverns and talk to the locals. If you can imagine two sides and one person hearing it in both ears, that's me. I feel that overall this has given me a real moderate outlook on the situation. Listening to both sides of the debate, these people from California and the east don't really know wolves. I don't think the people that sit around with me in Gardiner know wolves either. I feel like I know wolves somewhat because I've been watching them for four years, day in and day out, week after month after year. I know the members by name, by number, if you will. I have watched wolves interact with virtually every species of wildlife in Yellowstone. I've seen on the order of about 35 to 40 predation events, about 25 of those were on elk. I don't think many people can really say they have that depth of experience in watching wolves.

I've concluded from all this that there is a balance in nature, and I think we're all committed to this idea. But the balance isn't really like a teeter totter that just sits there in balance. I think it kind of moves one way and then shifts back the other way, and we experience these little shifts. A good example is this fall. A lot of outfitters and guides were out there hunting. A lot of people went home without elk. I was out there hunting but with a camera for film, and we had a horrible fall too. The elk were nowhere where we usually found them. There is a lot of wolf sign out there and a lot of wolf activity, but overall we felt like it was a weather thing. It was a thing where we had a very mild and dry fall and it caused a little head-scratching for us where we said, "wow, I wonder what happened to all the elk? Maybe the wolves did get them." But, that's not true. December bore this out when all the wolves came back and the elk came back into the valleys. We did feel that there was just as many elk as there seemed to be last year, as the current surveys indicate.

So, I don't think the northern range herd is in any kind of danger from wolf predation. I do think that hunting is in danger and I agree with the hunters and outfitters and guides here that it's not really from wolves; I think it's from perceptions and from people I deal with on the other side—the people from out of state who really value our resources in the ways that bring them here to enjoy things like predators—and who see hunting as something they don't want.

That's too bad, because as a native Montanan I think we have to handle our own things, and be in control of our own management. For the most part, I think we should continue to try to hunt, but we need to be sensitive to the people who look at hunting and predator control as a bad thing, in order to maintain that control. In other words, we can take ownership and do the hunting in the right way, and also deal with livestock depredation. I hope in the long run, ranchers and others can take ownership for their own problems and get out there with the traps and the guns and feel like they can take wolf depredation problems into their own hands. Likewise hunters, with licenses and tags (as soon as the wolves are delisted) can deal with it that way. But I don't think we have any need for hysteria or the thought that we are losing our herds altogether.

Dick Mitchell – I'm Dick Mitchell from Washington D.C. I spent 20 years for the U.S. Fish and Wildlife Service, most of the time in the Endangered Species Program. I did indeed work on the experimental population reintroduction of the wolf into the Yellowstone system, under Section 10J of the act- experimental populations. This reintroduction had a lot of political motivation and the poor field people had to implement this with the wishes of Washington. But this reintroduction didn't bother me because the rare and endangered Rocky Mountain population of wolves occurred within the greater Yellowstone ecosystem. If you read the letter of the law, and the Endangered Species Act is never equally applied—we apply it one way one time, and one way the other—but, on experimental populations, you are not supposed to release the experimental population into the range of a non-experimental population that already is inhabiting the area. This bothers me from the biological aspect that we did indeed have a Rocky Mountain wolf in the area; and we brought wolves from St. John's British Columbia, some 1,500 miles away, to swamp this population. Now, every wolf that you hear in Yellowstone, after he howls, he puts an A on the end like all the Canadians.

John Mundinger: Thank you, Dr. Mitchell. I also have to say as the facilitator we're gonna have very limited tolerance for ethnic humor. Eh.

Robert Taylor – My name's Robert Taylor, I'm a Consulting Wildlife Biologist from California. Some of you may be asking, "what the hell is he doing here?" and thinking I'm perhaps going to ask you to turn around and hug each other. Well if you're thinking that, you're wrong. We don't hug each other in California any more; we resolve our problems with guns and bombs.

I'm here at the request of the Friends of the Northern Yellowstone Elk Herd to help them with their problem. One of the reasons I'm happy to be here, is because I've seen this issue develop over 11 years since I was a faculty member at Utah State University. And folks, if it goes on a whole lot longer like this, people are going to be dying. I say this from experience. I've worked in the timber wars for the last decade; it's happened there. People can only take so much frustration, and then sooner or later there's a Ted Kozynski sitting on the sidelines listening to all this who will take matters into his own hands. I'm going to say it could happen on either side. I think each of you needs to look inside yourself and ask yourself how are you really going to feel when people start dying, because I'm absolutely convinced it's a possibility.

I'm basically up here to tell you that I think you need to think about that and start looking for solutions. I don't see solutions in the federal process that has occurred so far. Is research going to provide a solution? Well let me tell you this: I wrote a book in the mid 80's on the population dynamics of predator prey interactions, and I disagree fundamentally with Doug Smith on the role of predation on Isle Royal. Here is the longest wolf ungulate research trajectory in the world. If two Ph.D. scientists can't agree on what it means after thirty something years, then what's the prospect that science is going to come to a solution for you in the near future.

Everybody's askin' for more money for more projects. There isn't enough money in wildlife research in the western United States to solve problems by going out there and doing more descriptive science.

What we have here is a social problem. You're not going to solve it by dealing with the federal agencies. There's lots of reasons for this, and I'm not going to talk about the conspiracy theories or the fact that there are some people who don't want solutions in the federal agencies; I'm going to simply say in our experience in the timber industry, in the wars in the west, the Federal Advisory Committee Act severely hamstrings the ability of federal employees to participate in solutions that you can be involved in. That law is becoming increasingly restrictive of any kind of management advisory committee that has non-federal employees in it.

So, what's the possible direction of a social solution? It's the states. The states have got to step up and take a swing at this issue. I hear that Montana is about to do that, and I applaud that very strongly. But it's not enough. Wyoming and Idaho have to do it too. The citizens, the politicians of these states, have to simply say "all right, fine. We've been letting the feds run the show a long time now; now we're going to get in there and take our swing at the ball." I strongly urge you to do that. If you don't do that, I think you've got some real problems in the future.

David Gaillard – I'm with the Predator Conservation Alliance in Bozeman, Montana. It's a non-profit education advocacy group for predators. I really appreciate the opportunity to talk to you all today. I think we've heard a lot of good facts this morning that helped clear the air on what predators are and aren't, and I hope that will help in this debate as it unfolds.

I wanted to switch the discussion more to the realm of goals. I would submit that the end goal for the northern range in particular, is not simply to maximize hunter harvest. The American public, the Montana public, and even the folks in this room, I believe, would agree with this. Instead, the goal for the northern range and the wild areas throughout Montana and the northern Rockies is to restore ecological integrity and balance of nature in this region.

There are now 120 wolves in all of greater Yellowstone – perhaps 50 in the northern range verses 15,000 elk, so I would assume we are a long way from needing to worry about managing wolves to save hunting. Rather, we need to see wolf recovery through to its completion.

I don't want to limit my discussion just to the wolves and just to the northern range either. The forest predator community in the northern Rockies includes grizzly bears, black bears, lynx, wolverines, fishers, martens, bobcats, mountain lions, coyotes, among others. Besides the wolf, four other of these forest predators are also imperiled. Why is restoring healthy well-distributed populations of these native predators throughout Montana important? They provide a myriad of important values to different people. I'm just going to focus on the ecological role of predators in these few minutes.

A recent book by leading conservation biologists, Michael Suvlait and John Tuvorg examine the importance of predators in maintaining ecological integrity. They begin with a problem. Extension rates are acknowledged to be hundreds or thousands times higher today than they were in the pre-human past. Widespread elimination of top predators from terrestrial ecosystems the world over has disrupted the feedback process through which predators and prey mutually regulate each other's numbers. They describe the theory behind the importance of predators. Top-down predator effects have been shown to act on communities in two fundamentally different ways: one through preying on species that would otherwise increase to excessive numbers—that's called the pain effect; the other is through influencing the entire food web in all sorts of complex interactions. They then describe specific examples of the importance of predators; of how that theory has worked in practice. You've heard about the Isle Royal example, where gray wolves influenced moose numbers which in turn influenced the growth of vegetation on that island—balsam fir. In systems without predators, sailors historically introduce herbivores on predator-free islands throughout the world's oceans to insure themselves of a supply of meat on subsequent voyages. In numerous cases, introduced herbivores increased without check until they devastated the native vegetation of the islands; at which point, the populations of herbivores themselves crashed. Then there are systems where predators are introduced, like the sea otter recovery on the west coast which checked the over-abundance of sea anemones and other bottom dwellers, and brought back the kelp forest in that system. And finally, systems where predators were removed, and there are plenty of those examples. Again, the pain example where starfish were excluded from a tidal pool, mussels took over that tidal pool and sharply reduced the diversity in that system. In a Wisconsin lake, the removal of largemouth bass as the top carnivore in those lakes, led to dramatic increases in fish that eat the small animal plankton which decreased in size and number and caused a huge boom in the phytoplankton, a very small algae. That's a textbook example. There's also an example in the Venezuela Islands where the world's largest hydroelectric impoundments made hundreds of islands out of hilltops; where in the absence of many species and hyper-abundance of others, animal communities unlike any that would occur naturally were created. Communities so unbalanced from a functional standpoint; herbivores increased by more than an order of magnitude with devastating effects on the tree regeneration. In many parts of North America, extirpation of dominant predators has resulted in a phenomenon known as meso-predator release. Areas supporting small to mid-size predators—foxes, skunks, raccoons, possums, feral and domestic house cats—have found the extirpation of top predators has released herbivore populations in parts of the U.S. Consequences there we are just starting to understand. Whitetail deer throughout the eastern forests are starting to alter tree

regeneration. Ungulates like the Eurasian bore that were introduced are altering re-vegetation also.

So these folks, having looked at this very carefully worldwide, found that predators regulate populations of prey and meso-predators (medium predators), which then has corresponding impacts on plants and trees, ground-nesting birds, small vertebrates, the whole system. This can be likened to the balance of nature. I think that's what we all should try to keep in mind when we talk about balance. Thanks so much.

Charles Kay – Thank you very much. Most of you know a little bit about me. I lived in Montana for twenty some-odd years before I went down to Utah to work on my Ph.D. on the elk in the Yellowstone and vegetation questions. Even though I'm a wildlife ecologist, I'm in the political science department because as many of you know I'm not politically correct for a wildlife ecologist. Unlike most wildlife ecologists, I have a firmer grasp of predator-prey relationships. Along with Dr. Bob Taylor, I've been retained by the Friends of the Northern Yellowstone Elk Herd to provide expertise to them to settle the wheat from the chaff, because there's been a lot of misinformation that's been presented today, especially like the speaker just before me—I hate to criticize the individual, but there is no balance of nature; there has never been a balance of nature.

There are two fundamental views of nature as far as ungulates and predators and prey. One is that they are limited from the bottom up by the food supply, and that's Yellowstone's model, natural regulation – predators aren't important, they have no impact on these ungulates. The other is the view that the previous gentleman just said which is top down, keystone predator. Those two views are diametrically opposed, and he doesn't understand the difference. If you have top down predators, they have a drastic impact on the ungulate populations, like they are in Canada where I'm working for Parks Canada. They've taken elk herds where the counts were 600 to 700 down to 25 or less. They've taken them so low the wolf packs have disappeared themselves and gone other places. So, you have huge areas of all this wilderness habitat like you can't see. There's nothing wrong with Yellowstone or the Montana Rockies, but you haven't really seen mountains until you've been to the Canadian Rockies with the wardens on horseback.

What we're doing is we're out here trying to collect information from the various state agencies and try to tell the Friends of the Yellowstone if there is sufficient data set to try to answer some of these technical questions that we have. Even though I agree with Bob that this is a social thing and we need to look for a social solution, we also need some better data sets. Unfortunately, we're still arguing over the data as to whether wolves do that or wolves don't do that. So, the Friends of Yellowstone are proposing to take a joint approach both to work for a social solution and also collect some data on their own. They are trying to raise some monies and things to actually institute our own research because unfortunately, although they've spent a lot of time on the wolves, they haven't spent any time actually on the prey—radio collaring elk and these other types of things that Dan Pletscher mentioned. Those kinds of studies haven't been going on. So we are sort of serving as their technical experts, and if you have any questions about wolves or whatever and you want an

independent opinion or second opinion shall we say, you can either contact me directly or go through the Northern Friends of the Yellowstone.

Just in finishing, I would say that many of you know after I published the things I did on wolves, that Ed Bangs here tried to get me fired. He called the president of the university and my department chairman to try and get me fired. Called the people in Parks Canada and tried to get me fired. I would just like to thank Ed Bangs for trying to get me fired. Because see what Ed doesn't realize is that when a federal government bureaucrat calls a department chairman in the state of Utah and asks him to fire one of his faculty members, that just raises the credibility of that member. And there's only one thing better than having a government bureaucrat try to get you fired, and that is when the White House steps in to try to prevent you from speaking. So, I've been banned by the White House when I was supposed to speak on the Western Sites Coalition. Yellowstone Parks' field felt so threatened when I was supposed to have a debate in front of Newt Gingrich and all these Congressmen, that they went all the way up to the White House, the White House called Newt and I got cancelled. Utah was so impressed with that that they made this permanent position for me at the University. So I guess Bangs has done me some good after all. Thank you very much.

Troy Madir – I'm the research director from the Wildlife Society of North America, and I'm biased. If you've thought this wolf issue through at all, you've probably picked up some of the data and the research that we've put together opposing this fiasco. Yes, it was crammed down your throat despite what everybody says. I really don't want to give you my opinion particularly; I just want to share two points of clarification so you know. I've been in this fight for 12 years, and I've seen a lot of things going on.

The first thing that was brought out this morning that you need to understand is, they did not have local support for wolf recovery. You're a minimum population, they can discriminate against you. You don't have the numbers and they did it. To give you some examples, so you know I'm not talking out of the top of my head: we implemented and gathered 53,000 petition signatures and surveys that we hand-carried to the Fish & Wildlife in Helena. Thirty-three thousand of those came from Montana, Wyoming and Idaho. Well nobody has any numbers close to that. Now the figures that wildlife's given credit have more numbers than we do; they had 80,000 ballots. But we examined the ballots and we have photocopies and pictures of them. Kids 7 years old could sign a ballot and say 'yes' for the wolves. Somebody from South Africa or Russia, or Greenland—there's even blank ones in there they counted. I've got pictures of them. They got more numbers, but as far as where they're from and who they were we got the numbers, and it was locally, and we said 'no.'

Second of all, all three Legislatures in Montana, Wyoming and Idaho went on record, either by petition, resolution, or memorandum, opposing wolf recovery. I just want you to know that's a matter of Legislative record. Those legislatures went on record saying we oppose this wolf recovery.

Third, I went to Ed—Ed and I have had a lot of conversations—and said "Ed, you didn't have local support," and he goes "I knew we weren't going to have local support. Why do you

think we went national with the EIS." Now think about it folks. Red wolf recovery occurred before Yellowstone wolf recovery. Did you have a say in that EIS? Absolutely not. They stayed with South Carolina. But when it came to the Yellowstone EIS, they had hearings from Washington D.C. to Anchorage, Alaska. And also, due to the unpopularity of wolf recovery, Fish & Wildlife has brought up a very important states issue and I think it's going to be pursued. I'm sure of it; and that is, how could they bypass Idaho and go to the Nez Perce Tribe to get wolf recovery in Idaho? And why did they do that? Because the Idaho Legislature went on record and told the Idaho Fish and Game, "you will not participate in wolf recovery because we're opposed to it." That's the first clarification I want you to know.

The second thing, I appreciate Hank Fischer's statement about recovery goals, but I suspect that most of you do not know that their compensation program ends when the wolf's delisted. That's the way it's set up. Number two is let me explain why the problems are and clarify why this compensation program doesn't work. Number one, only documented kills can be compensated, for the most part. There are a few exceptions, very few. Finding documentation is a very difficult three-part process. One is consumption. They talked about the carcass, the skull of the calf. Two is the decay process, including scavengers—remember the slide up here of all the ravens. You've got a very short window before those scavengers remove the evidence of what killed that animal. And terrain, whether it's ground cover or heavy forests, whatever the case may be. It's very difficult to find those things. We did interviews with wildlife officers across the western United States asking them how many animals do they feel they actually could find in time to find out what really killed them, as compared to the total number of animals killed by the predator. The consensus was 10 percent or less were actually found in time to confirm what killed it. So that means 90 percent is your loss or whatever.

Anyway, I appreciate it. I just wanted to bring up a couple of points so you'd know. Thanks.

John Mundinger: Please keep in mind as you come to the mike that the purpose of this meeting today is information exchange. We're not going to prove who's right and who's wrong today. We're not going to influence a final agency decision today because none are pending. The primary purpose of today's meeting is to exchange information to help move us as a group to getting a little closer to a common understanding of what some of the factual and social issues are related to predator management.

Vito Quatrero from Bozeman. Unfortunately, I've not heard anybody from the bureaucratic end of the table say something that I think is very important for the public to realize: the likelihood of the wolf being delisted under the current Endangered Species Act within the next 10 to 15 years is slim and none, due to two factors. You are well aware that if you attempt any delisting you are going to have a legal challenge by many environmental organizations, possibly one sitting at the table up there. The other reason, and I believe Mr. Servheen or one of you gentlemen alluded to this, you're not going to have the genetic diversity required to have a biologically sustainable population. Somebody there tell the public, you've mentioned delisting a lot, tell them that it's not going to happen. At least be truthful. Under the current law, unless the law is changed, it's not likely to happen.

R. Ed Bangs – From what I've heard I'm going to have a really difficult time being truthful, but I'll give it my best shot. Actually, the Fish & Wildlife Service—Minnesota met their recovery goal this spring (Minnesota, Wisconsin, and Michigan had a five-year deal)—has prepared a proposal to look at delisting the Midwest, waiting for a state plan. The Minnesota Legislature decided not to do a state plan, adjourned, and as a consequence that's been put on hold.

I think the Service is committed to delisting species when recovery occurs and the legal process that, by law we have to follow, is met. Part of the delisting process, by law, is there has to be adequate mechanisms, just like Chris said, to ensure the animal doesn't become threatened or endangered again. In Minnesota, Wisconsin and Michigan that means a state wolf management plan.

(Quatrero) What's the current population of wolves in Minnesota? (Bangs) The current estimate just done is about 2,500 in Minnesota, and I believe about 200 in Wisconsin and 200 in Michigan. So the numerical goals were met this year by your countdown and we're just waiting on the regulatory process.

Tim Stevens from Livingston. I've got a couple of points. The first is I would like to thank Doug Smith, Chris Servheen, and Ed Bangs as federal representatives, for their commitment to the American people and the American people's land. We appreciate your commitment. The second thing is, I'm not sure if the Friends of the Yellowstone Elk Herd are aware of this but in August of 1997, the Bozeman Daily Chronicle quoted Dr. Charles Kay as calling for quote taking the northern elk herd down to nothing. So, if you support what Dr. Kay says, I guess you support zeroing out the northern elk herd.

The final thing I'd like to say is I'm worried about all the predators in the Paradise Valley as well. I'm really worried about them, and I've seen them increasing. And the predators I'm talking about are the developers walking around with dollars in their back pockets that are buying up the ranches, subdividing them and building houses on your winter range. That is the problem before us for the long-term health of ungulate populations. It's not predators. Come on, anybody who's driven through the Paradise Valley knows what's happening to the winter range. It's getting built on, it's getting subdivided into 20's. In 20 years, we're not going to be debating ungulates, we're not going to be debating wolves. We're going to be talking about houses and developments. There's many approved developments right now in the Paradise Valley that are just waiting to be built. That's the problem here, folks. What I'd like to see is a commitment by the groups who sponsored this conference to sponsor another conference to talk about the loss of winter range and habitat for ungulates. Thank you.

Ray Bartlett from Livingston. The one thing I failed to hear addressed here today is the poor people of Montana that subsist from our countryside by living and hunting and getting extra meat that they can't afford to buy. I also heard one of the bureaucrats up there say, well the solution is if you play golf it's only $20. If you hunt it's $13. Well, some people can't afford it.

The next thing is what the wolf has done. He stresses the animals; he chases them out of the country. The areas we can hunt are less and less every year. The hunters' ability to harvest today is zero compared to what it was when I was growing up as a young man. This is getting to be bureaucracy beyond control. Thank you.

Brian Stein, Billings. Some of the numbers don't add up for me. I've heard Hank and Douglas both talk about how the wolves stay pretty much in Yellowstone Park. Then I've heard Ed say a wolf will roam 500 miles to find a mate. Which of these is true. And then on the pack situation, we need 10 breeding packs in Yellowstone. Ed was talking about there is 350 wolves in the Yellowstone area, and Douglas and Hank both talked about the 150-160 wolves. Which are the numbers?

R. Doug Smith – I apologize for the confusion. I had a slide up here of all the packs in the Yellowstone ecosystem and seven were primarily inside Yellowstone and on that figure four were outside. So there are wolves that range outside Yellowstone Park. The population of those 11 groups is about 115 to 120 wolves in the total system. That's about 48 wolves on the northern range. The overall population is 116 in the Yellowstone area; there's a few more than that in Idaho—about 130 to 140—and then there's 50 to 60 in northwest Montana. And delisting is based on breeding pairs or approximately 300 in all three areas, not just one area.

(Stein) I've heard before that there's the 300 wolves in the Yellowstone ecosystem. (Smith) No. (Stein) And then as far as the range, they will travel up to 500 miles to breed? (Smith) The maximum recorded dispersal distance for a wolf is about 550 miles, I believe. I think Chris brought up the isolation of Yellowstone for the grizzly bear. The isolation is similar for a wolf although not as bad. Wolves can travel much more readily than can a grizzly bear, but we've only documented one wolf leaving the Yellowstone ecosystem and going somewhere else—wolf number 132 of the Washiti pack in the Lamar valley, left and went into central Idaho, was picked up near Salmon, Idaho, and is now living in the Selway/Bitterroot Wilderness of Idaho. That's the only exchange we've documented.

(Stein) As far as on the traveling of the wolf, as the packs get larger and the numbers increase, we could actually see wolves come down the Yellowstone River and into the Livingston area, Reedpoint area? (Smith) Oh yeah, they've already done that. There's been wolves up and down Paradise Valley. We've had wolves at Reedpoint as well.

Leland Blatter – Just an observation before my question. Mr. Fischer, you might enlist the help of Mr. Smith. He seems to have no problem verifying wolf kills.

Let me say at the beginning that while I'm concerned about all prey and predator, my question and my main concern right now is going to focus on the northern Yellowstone elk herd and the wolves in that area. When we talk about numbers and that, there's been a lot of confusion, both in the past and at this meeting, between what we call native elk and Park elk. A lot of this confusion has been due to the fact that our Montana Department of Fish, Wildlife & Parks has been negligent in monitoring our native elk and the wolf activity in those areas. In 1992, our state put together a game management plan in which they outlined what they wanted done in each of the hunting districts, both for elk numbers for classification

of those elk, and for what their goals were for targeted hunter success. Mr. Erickson, I'm not going to waste our time today by asking you to respond to that; you've already indicated that the state has no intention of taking any immediate action. Mr. Smith, though, I would ask you. Has the Park Service determined how many elk they will allow to be depleted out of that herd? Have they determined the target size at which they'd like to see that elk herd maintained?

R. Doug Smith – The management of Yellowstone does not include setting management objectives, so no we have not.

(Blatter) Did you not set management objectives for the wolves? (Smith) The Fish & Wildlife Service in their Endangered Species EIS did set management objectives for wolves, but… (Blatter) Then how can the Park Service not have any management objectives for the northern Yellowstone elk herd? (Smith) That is the philosophy of the National Park Service nationwide to let natural regulations, especially for Yellowstone, occur. That's just what happens inside Yellowstone.

John Cargill from Whitehall. I'm an outfitter; also, I'm on the Board of Directors of Skyline Sportsmen. I guess I will say I'm really disappointed not to see the local sportsmen get involved here. They are probably the biggest losers of anyone involved in the situation. Of the 140,000 sportsmen in the state, they are probably going to be the ones that are going to take it in the shorts quicker than anybody.

I do have a couple of questions directed to whomever may be able to answer. First of all, I'd like to know how many wolves before we say stop, removal, control, whatever. Another question to go along with that is what is the wolf reintroduction cost to the taxpayer; what will the future cost be to remove, control, recover economic loss and wildlife due to the reintroduction of wolves, not only in Montana, Wyoming, Idaho, but the United States totally. Who will foot this bill, the federal or the states? I think man has taken over the predator system in wildlife management. Could I get one of you gentlemen to address that?

R. Ed Bangs – I guess my job is to get wolves recovered and delisted, and that means 130 breeding pair. We figured that would be about 300 adult sized wolves. It looks now like it's going to be more than that if current trends continue. So, ultimately, the number of wolves and their distribution is going to be decided by the state fish and game agencies and tribes is my guess. My job is recovery.

The cost of the program, if you go from when wolves were listed in 1974 until we think delisting is going to occur, like in December of 2002, will be about $15 million. That's the estimate right now. Right now, we've spent about a million two in the three states for all the monitoring, wildlife services control, all that kind of thing. After wolves are delisted, I think the wolf management will reside with the states, and it'll probably be some kind of state funding, although I understand that many of the states have been talking with their senators and congressmen to try and get some federal money to help with that afterwards.

(Cargill) How long will delisting take? (Bangs) If we meet the recovery goals in December, and if you look at the way it's supposed to go, it should take about six months to get a rule out, six months of public comment, so I'm saying a year from the time it's proposed.

(Cargill) How come it's going to take four to five years for grizzly bear that we've dealt with the same situation for the last 20 years. How is the wolf going to be any different? (Bangs) Well, I guess wolves are easier to count for one thing. They're not as dependent on habitat, and wolves have a much higher reproductive rate. Management-wise wolves are easier to manage than grizzlies. But, Chris may want to talk about that one.

R. Chris Servheen – The answer to the question of why is it going to take so long, is because there are a lot of things that have to be done by the Forest Service, the three states and the Fish & Wildlife Service. It's not a trivial matter. A lot of it deals with habitat, forest plan issues, changes in management of forest plans. All of that takes time because of the public comment process that goes with it. Plus the Montana Legislature has to change one of the Montana laws, and they won't meet again until the year 2001. So, there are various other things that have to be done. It's not just a cut and dried process. And recovery is more than just numbers of bears. It requires habitat, and it requires adequate regulatory mechanisms to be in place and agreed to by the agencies.

Jerry Shively, Thompson Falls. I'm an outfitter, I sit on the Board of Directors of MOGA, I've also served on the Citizens Advisory Group of the Cabinet/Yak Grizzly Bear Recovery since its inception, and I have two comments. One, I've heard the value of a deer license at $13. You should value in the non-resident contribution and it's going to be a lot higher than $13 when theirs is figured in.

Number two, and this is very frustrating to most of the people in this room or a lot of them. You've got two groups of wildlife professionals in the state of Montana. One group's ability to live, to survive depends on a viable self-sustaining population of animals. The other group works for the government. The outfitters is the first group. We're out there everyday, spending our lives in the brush, we're watching it, we're seeing it. We have absolutely no credibility. Anything we tell you is nothing.

Chris sits up here and says they have no documentation of what's going on other than in Yellowstone. There's an awful lot of us out there who are out there livin' it and seein' it—and this is not just wolves, grizzly bears—this is our entire fish and game process. Our local biologists sit in an office with a computer making wildlife trends. No matter where he's from, he has all the credibility. The people livin' it, seein' it, have none. Something to think about. Thank you.

R. Chris Servheen – Jerry, let me make one comment to your comment, and I appreciate seein' you. We take a lot of records of females with cubs in the NCDE from credible outfitters. So the outfitting community is a big part of the database we have in the NCDE. You guys do contribute to that and Mike Madel from Fish, Wildlife & Parks collects all that stuff from the Rocky Mountain Front Outfitters. We do take information from you guys.

Wayne Moore. I've been a resident of Big Timber for 15 years; visitor for 20 before that. In conjunction with wolves, I lived on the Quebec-Ontario border for 55 years. I'm very familiar with them. What I want to say is about deer, there's no elk there. In the 55 years I lived there, I met people from all over the eastern seaboard who fished and hunted Canada. I never met the man and I've never read a story in any outdoor magazine about the men who ever wrote about hunting deer in Quebec or Ontario. There's not enough to make it worth it. Never heard of it. There's lots of wolves there.

I think what a lot of us here are concerned with is the remark by Mr. Erickson this morning when he said Minnesota had a lot of wolves. But, he said, the public opinion of the United States is very likely to let them delist them. I think the people here in Montana figure we're in the same boat. It's a matter of the people of the United States telling a person in that state what they have to live with. A lot of people don't find that acceptable.

And the predator control the gentleman brought up, the costs of the helicopters and Super Cub flying, if you look at the price of the non-resident deer license at $250, in the neighborhood of $500 for outfitter guaranteed, it does make you wonder if maybe the predator control is not worth it compared to what's taken in for those deer and the money revenue for licenses.

Troy Madir – First of all, an observation and then I have two questions for Chris Servheen. One is, there's been a lot of documentation and a lot of writing recently that illustrates that the Endangered Species Act simply does not work. We have not recovered virtually anything we can document that's been on the list. I think, primarily based on what I've studied, it's probably because there is no economic incentive to delist species. They make money and that's the bottom line. The only time we'll have any delisting is if it's advantageous to other species, such as the eagle. Back in the early 80's, there was a grizzly plan that was written, and it appeared that we were going to recover those goals. Then all of a sudden that plan was thrown out and a new one was implemented. Chris, what were the significant differences of the two plans? And what guarantees do we have that this plan we're currently under won't be changed if the recovery goals are going to be met?

R. Chris Servheen – The plan that was originally written in the late 70's and actually approved in the early 80's, had very limited information in there about things like monitoring populations and setting population goals. For example, the population goal in the Yellowstone ecosystem was 301 bears. We know since the early 80's that we can't estimate the population in the Yellowstone ecosystem with any kind of credibility as to 301 bears or not. That was one of the major changes. What we did instead of an absolute number of bears is we now monitor the numbers of females with cubs, the distribution of family groups, and the numbers of dead bears. Those are the three indices we use. We have met those three indices now for the Yellowstone ecosystem, so those are the things we can actually measure and determine whether we've met those or not. There were numerous other minor changes, but the major incentive to change it was to make it more biologically credible, to give it things we could measure and actually be sure of measuring.

Your second question, are we going to change this plan. No, we are not going to change the recovery plan. In fact, as I mentioned in my talk, we will be releasing the draft conservation strategy for the Yellowstone ecosystem in early March, just a few months from now. That is the document that would be the Management Plan for the Grizzly Bears in the Yellowstone Ecosystem should it be delisted. The three states, the Forest Service, the Parks Service, and the Fish and Wildlife Service, have been working on the development of this plan for some time. That is the next step. We need to get that plan out for you guys and the public to look at and comment on, and then we will finalize that and put it in place. So, we are moving ahead, ratcheting off the things we need to do to achieve the targets in this recovery plan; and we're not changing this recovery plan nor its targets.

Gene Drynan again, from Gardiner. I've got a couple of questions: Jim, I've heard a lot of reasons why we have the wolf in here, but I want to know exactly; why did we reintroduce the wolf to Yellowstone when Yellowstone already has the wolf? Who pushed the wolves on us? We had a gentleman say we had 14,538 elk. Where did they all just appear from? November, September, October, they were not around anywhere. Then they make one or two flights and all of a sudden they find all these elk. Do we have any documented proof of this?

R. Glenn Erickson – All I can relate to you is what I have in front of me which I'll give you a copy of. It's a memo from Tom Lemke that basically lays out that there were fixed-wing flights conducted on December 27, 1999. Outside the Park they counted 2,726; inside 11, 812 for a total of 14,538. That's the proof.

R. Doug Smith – I'll respond to the question of whether or not there were wolves in Yellowstone. There's a lot of debate about this. Wolves were historically there, and were eliminated. The last one was killed in 1926, so they were probably gone by the 30's. There were probably some stray wolves moving through the area, but there was no population of wolves prior to reintroduction. We know that because wolves are very good at finding other wolves, and all the wolves released in the Yellowstone ecosystem were collared and they roamed widely and did not pair with any other wolves, and they would have done so if they were there. They always came back and paired with wolves that were reintroduced or that were born there. So, we used that as evidence that there probably weren't wolves there because other wolves would have found them.

Tom Sather, Bozeman, Montana. I'm a member of the Headwaters Fish & Game Association and I just have to ask this question. I can't believe how history has changed. How many guys in this room still have their $1 grizzly bear tags from the 1960's? I've still got my tag. They were a buck and then they went up to five bucks.

We know that over a million dollars was spent on wolf reintroduction. Sites were picked, based in part on the presence of good ungulates and public land presence. Management of the prey species to protect winter habitat and acquisition of many critical game ranges were paid for by Montana hunters. This raises a few questions. Has any money been spent on or being sought to acquire habitat outside the Park to help produce prey for this new predator? That's one question. It's also acknowledged that increased monitoring of prey populations

will be necessary, and I want to know who's going to pay for this? Is it the Montana hunter again? Since wolf populations are and will be protected, if they start having an extreme effect on game populations and the hunter harvest has to be curtailed or cut out of the equation, will there be any compensation to the coffers of our department for the loss of future bighorn sheep, moose, elk and deer license monies? That's the third thing. The last thing, when you go to count wolf pairs for recovery there needs to be more effort made to be sure that the other free-ranging male/female pairs are accounted for. Even though they may not represent a pack, their numbers must be reflected somehow in consideration for delisting as it approaches.

R. Glenn Erickson – As far as dollars for habitat, I think there's been a lot of work in the Yellowstone and Gallatin Ranges in particular. There have been several land exchanges with the Forest Service, etc. There's also been some purchases there at Dome Mountain. Conservation easements have been put on a lot of the private land that's around. There's been a lot of work in the Yellowstone to try to create habitat for, or at least maintain habitat for elk and deer and all the other species that are there. I think you can probably look toward more of that occurring in the future and all the funding that goes for that is coming from sportsmen's dollars; a lot of it the non-resident dollars going into our Habitat Montana Program that the state is purchasing, along with several other different groups—the Rocky Mountain Elk Foundation and several others.

(Sather) Thanks Glenn. I was looking for dollars from people other than sportsmen.

R. Ed Bangs – Real quick, and I make this appeal every time I talk to a group. We have essentially right now four biologists in Montana, one in Wyoming, to cover umpteen hundred square miles. We desperately need reports from the public on wolf activity. What we do is, we don't judge them or anything else, we say 'thank you very much' and put a dot on the map. When we get a cluster of dots that gives us an idea where we can spend our limited dollars and our limited people to go in there and try and put radios and get a better accounting of wolf groups. This is particularly important in northwestern Montana where it's all been natural dispersal and we have to find these new packs. Also in Idaho and in the Yellowstone area, we have a lot of dispersal going on and that's going to continue for the next 3 years. Some of those wolves are going to be uncollared. The *ONLY* way we'll find out where they are is by the public clueing us in. I'm begging you; if you see wolf activity, report it to the Forest Service, Fish & Game, Wildlife Services and that information will get to us and help us. But, we can't find wolves unless you help us because we don't have that much money to spend to send people out willy-nilly. We especially need guides, outfitters, trappers, lion hunters who are out there and know what tracks look like. Wolves are very easy to find. Please help us out on that because you are helping us get the recovery and delisting.

Bob Fanning, Friends of the Northern Yellowstone Elk Herd. My question has to do with money, and I'd like to direct it at Mr. Erickson and Mr. Fischer. What I've got in my hand here is a document called 'Wolves For Yellowstone,' a report to the Congress, the Senate, and the Department of Interior commissioned in 1990 which was composed by 15 Ph.D.'s, who were told to respond in an unbiased fashion. In addition to that, I have a 1995 report by Peterson, Gassaway and Nusseay, another study done regarding wolves introduced to the

Yellowstone ecosystem. In both of these documents, in this contract to America from the wolf reintroduction people, targets were put at 78 to 100 wolves and it was mandated, it was insisted upon, it was demanded that intensive wolf prey studies be done on a year-to-year basis. Not only aerial but on the ground, and also studying things like fecal material and urine for the hormone balances in them. We were led to believe that these studies were to be done. Additionally, the same thing was said by Nusseay, Gassaway and Peterson in this study where they said Yellowstone as an ecosystem will be destroyed as we know it if these studies are not done. My question to Mr. Erickson is: since Congressman Young and his resource committee has unearthed $45 million being looted out of the Robertson-Pittman funds and Dingell-Johnson funds by the Department of Interior, will you be instructing the Attorney General of the state of Montana to go retrieve those monies that are actually ours? They are collected by the federal authorities, but those are our monies.

R. Glenn Erickson – Pittman-Robertson funds and the way you're alluding to it is an audit that was done of the Fish & Wildlife Service. That audit is the one that dictates to them where the funding goes. As far as the state of Montana, we are allocated just like all the other states based upon a formula, and that formula dictates the amount of money we take in in Pittman-Robertson funds on an annual basis.

(Mundinger) So in short, Glenn, are you suggesting if there is money missing from the P-R account it did not affect how much money came into Montana? (Erickson) Yes.

Lee Bridges – Part of the year Eureka, Montana; the bulk of the year from Spirewood, British Columbia. I don't have a Ph.D. from Harvard but I have a Ph.D. in hunting carnivores. I've been a professional hunter for over 32 years. I hunt wolves. I kill wolves, probably one of the few people in here that's killed wolves. I have a real problem with the numbers. Like the fellow says here, there's only five or six wolves in Glacier Park, I really take exception to that.

I have a comment and a suggestion. I hunt the wolves in British Columbia by howling. The big problem I have with a lot of members of the panel here is these numbers, and I think everybody in the audience is saying 'hey I think that guy is really off.' I have a suggestion. If we could get a demonstration from one of these wolf boys around here to show us how to howl these wolves, you can go out and you can locate these wolves. How do you locate your new wolves? You go out howling right? Then you locate them, then you trap and collar them. I personally think there's a lot more wolves in northwest Montana. When you say 50 or 60 sir, I think you're really off base.

Another thing, a lot of this is political. Across the border in British Columbia where I live, our spring bear season is April, May and June. We can shoot two bears. It opens again in the fall for four months. Cougar season opens. We can shoot two wolves. (Reminded by John Mundinger that two minute time period was up)

Thank you for the opportunity.

(Side comment by John Mundinger – I do think the suggestion about professional wolf managers providing some others some instruction on how to assist in surveys was heard by a couple of people up here, and there may be some opportunity to follow up on that).

Sandy Seaton Seelye from Emigrant, Montana, with the Montana State Houndsman Association; also the co-owner of an outfitting business and I grew up at Mammoth Hot Springs. I have a two-part question for Mr. Hank Fischer. You spoke about using traditional methods to manage predators and you touched on the subject, but I'd like to get a clear idea where you stand. Do you and your organization support Montana's current mountain lion management plan and if wolves are delisted, at what point would you and your organization support a similar management plan for wolves.

R. Hank Fischer – The way we tend to view large predator populations is once they're off the endangered species list we're much less concerned about some of the specifics of management. I guess what I would say is once you get to the point where you have a huntable population; you have the luxury of being able to have that debate, where when they're endangered you don't have it. We have not challenged mountain lion seasons or anything like that in Montana. I think it's probably safe to say that there are certainly segments of our membership that don't like hunting of large predators. I can't say that that is a priority for us though, once population levels get up to a sustainable level where they're not on the endangered species listing any longer.

(Sleeye) So you wouldn't oppose a wolf season if it were to be delisted? (Fischer) Right. (Seelye) Thank you.

Ken Sinay, Bozeman, Montana. I'm a guide, multiple resources, but a guide. If you need to find a good restaurant or a bar, I'll help you find that too. During the five-minute stint I have kind of a bone to pick with some of the folks, particularly the gentleman from California, no offense on your point of origin, but your comments in relation to potential violence. When I came to this meeting, I expected information or a meeting associated with transfer of information and communication, and those kinds of comments don't promote that. I just thought I'd point that out. Here in Montana, I guess I might expect a punch in the nose or something. I'll watch out for that, but I don't expect bombs or guns so you can keep those in California.

I do have a question using Yellowstone National Park as an example. We have a pretty distinguished panel up there of carnivore and predator biologists, so I suspect I can get some kind of response out of this. Part of the wolf introduction EIS as well as contemporary ecological science and considering changing habits of the northern Yellowstone elk herd per Tom Lemke—more of them apparently are wintering outside of the Park, primarily as a result of habitat acquisitions—based on those very changeable and dynamic factors, what can we expect the elk herd to do? Or what's your prognosis of the northern Yellowstone elk herd? Up? Down? Static? Stable? And how will that affect the huntable population?

R. Ed Bangs – You mentioned the EIS a little bit and there was a whole series of studies even before I got involved with the Yellowstone thing that were looked at. You've all heard

stories about the fact that wolves come on the winter range, all the elk will go up in the snow or something and starve to death, and that's an additional impact. We actually had a guy from the University of Montana look specifically at that issue. From the data they have in northwestern Montana, when wolves came into the area, the elk and the deer I believe moved into heavier cover and out of the open areas, but they really didn't change their seasonal habits. They still use the same winter ranges. And that was apparent for deer and elk. So we have looked at that very issue, and that's common with other places. That doesn't mean that predation won't move some animals around. I think that certainly happens, but we didn't see major shifts in habitat. I think the key thing I heard from Jim Cross and other people and most biologists know it, if you have really good habitat predators have less influence, prey has more hiding cover. So we looked at it and we didn't see those big changes.

John Volartson from Bozeman. I'd like to hear a little bit from our public representation, in particular, the rancher/outfitter Mr. Malcolm I believe the name is. Without question, you are in the middle of kind of a tough rub there. Montanans, especially property owners, are expected to share the precious habitat—not only access with local people, but also predators too. There's a lot of demands on you, and it's appropriate to want some sort of just compensation for it. What I would like to ask you to do is, first of all you've identified some pretty serious impacts to yourself, and they represent impacts to all landowners. We can identify problems again and again and again, but I'm interested in what you as a rancher and as an outfitter would see as solution. I would say, let yourself dream your own plan if you had unlimited resources, but with constraints that we are going to have to maintain a wolf population either with a federal plan or under some state plan. Tell me what you think your ideal plan would be for just compensation and to reduce your stress level.

Bruce Malcolm – This is just some wild ideas. One of the things that might work is since we have from three to six extra calves a year lost to wolves—if the ranchers had an average of lost calves over the years and because of wolf reintroduction they've lost another six—that could be the basis for compensation. That could be fine-tuned of course.

We have had a little bit of success on other predators of shooting at them and near-missing them, so they disperse to some other area, and are not near so apt to come into our livestock areas. It's a little dangerous with the wolf because if we're not a really good shot we might get in trouble, but it does work.

(Volartson) Where would that compensation money come from? (Malcolm) Well, the Defenders are doing some now. We need to have more trust in that program on both sides. We've spent millions of dollars introducing wolves, there ought to be a few hundred thousand for compensation for what they've caused.

(Volartson) Would you like to see that come from the federal sector, tax dollars, license fees, or what would you recommend? (Malcolm) I guess I haven't thought that much dollar to dollar. In order to be fair it ought to come from the cause of the problem. If the wolf causes the problem, that's where the money ought to come from, and it shouldn't ought to come from Montana sportsmen.

Bob Shepard from Ovando, Montana. I'm going to digress slightly from the wolves; give them boys a little bit of breathing room. I'm going to focus on another predator and that's a cougar. This is for Stan Meyer when he gets back. We have a study going on in my area. This is a cougar study immediately adjacent to the lynx study. They're in the process, I believe, of listing the lynx. It's a pretty touchy issue. They've proven that lions are the major mortality factor on the lynx in this area in the summertime. Now they are going to change the entire direction of the study. When they did it, there seemed to me to be a strong lack of communication between the biologists on this study, the biologists on the lynx study, and the biologists on the wolf study, as well as the local landowners, sportsmen, and people in the area. It seemed to me it was shoved down our throats. We were told it was a done deal. I thought some of these things, like the wolves, were supported by the local people. I'm not seeing a lot of local support. I look around here and I'm not seeing a lot of local support on the wolves. It appears to me this predator/prey stuff is all inter-related; so is there a communication gap there?

R. Stan Meyer – I think we're having some communication right now. In terms of whether there is study on the inter-relation on various carnivore prey, frankly the folks on the right-hand side of the table would be more aware of that than I am. Is your question related to what we're doing in the Garnets? (Yeah, pretty much).
In the Garnets we're trying to obtain some solid population data on mountain lions. For those of you who are not aware, the commission has been asked by the department—and the Commission so far has been in support of this; there is a tentative proposal out there—to close the season on mountain lion hunting in a certain limited area in the Garnet Mountains, southeast of Missoula, so a reasonable study can occur. They want to use tracking methods and other means to determine how many lions are in an area because 70 percent of the lions that had been collared there were then killed by hunters. So, we're killing off our research base. I don't know that that answers your question. Glenn, do you want to respond to that a bit more.

R. Glenn Erickson – As far as the communication between the studies, the lynx work is being done through the University of Montana and the Forest Service Research Center there is funding a lot of that. There is a lot of communication between the state and the University and the FS Research. We have been exchanging information. I think that can improve. I don't discount that there have been some problems in the past.

It is our intent on the Garnet lion study to really find out how we can gauge how many lions are in an area over a period of time, and try to apply that to gauging how many lions we want to have as an objective in an area, and then managing lions for that purpose. Our whole intent here is to get good data on how to manage and maintain lion populations. Right now we're reacting to public pressure and our own feelings about what lions are doing in an area; and I think we can get a lot better information on lion populations from the results of this research. We're looking forward to doing the research and the closure we are asking for is just a short-term three-year closure so we can get a handle on how many lions are in that area, what the age structure is, etc. Then we'll apply hunting again at that time and see if we can't manipulate that population and actually track what happens to it through the measuring devices we'll be using. That's our intent. I think without that, it will be more difficult to

manage lions and I think we'll learn a lot from that process. We will be exchanging information with the lynx project also.

R. Dan Pletscher – Just to follow up on that, I'm peripherally involved with the lynx project, although it's primarily a Forest Service project with some connections to the University of Montana. The primary goals there are fairly similar to what Glenn mentioned with the mountain lion study, trying to figure out how we can go about counting them. Trying to find out how many lynx there are out there is a pretty important question when the proposal for listing is before the Fish & Wildlife Service right now. Also, looking at relationships between lynx and habitat, almost all the lynx research projects that have been done have been in Canada. So we're trying to fill in a knowledge gap there.

I agree with Glenn there have been a couple of communication problems in the past, a couple of years ago, but I've not heard of any since. I know Rich and John Squires are working together fairly closely, and also trying to work fairly closely with the locals and others using trappers and houndsmen to help with the lynx as well as the lion project.

Kelly Flynn – I'm a sportsman and I'm an outfitter, and I'm a rancher, and I'm a Montanan, and I'm a United States citizen, but I'm not very good on math. So, I have some questions because I want to try and sort something out. Doug, in your presentation on calves to cows in 1999, on your graph it said 35 calves to 100 cows. Is that correct? (Doug Smith) Yes, last year's survey, March 1999 was 34 calves per 100 cows. Glenn, when you came up you said that there was 17 calves to 100 cows. Is that correct? (Glenn Erickson) That was in this past December. (Flynn) Thank you. Now, in an earlier presentation in the northern part, it talked about how many calves to cows it would take to sustain a population when the predators were there. I'm not sure I saw that figure, but I thought it might have been 45. (Right) So now, I've got 45 to sustain that population, and in the Park we had a 34 figure in one case, and it was lowered to 17 in December. I guess what I don't understand is all those things talked about and an increasing number of predators acknowledged by the panel, both grizzly bears and wolves, why this population is not going to go down a lot as far as elk. I ask everybody, putting those figures in there, isn't it going to go down? All of us who are users are concerned. Would someone address that.

R. Dan Pletscher – It all depends on what the survival of those adult cows are. If the survival of adult cows is 100 percent, you wouldn't need any calves per 100 cows to survive. *If* your survival was 100 percent; it isn't. It never is. Right? If in the north fork of the Flathead where we were studying, survival of adult cows is about 80 percent per year—you start off with 100, and at the end of the year you've got 80—you've got to replace those 20 females with females. Right? Sex ratio approximately 50/50. So you need at least 40 calves in that situation per 100 cows. Actually you need a few more. We can go into the math if you want, but I'm rather math-challenged as well. Trust me it's about 45. Now, the 17 that we heard might sustain that population, but for that to be the case, you'd have to have adult female survival of about 94 percent. I don't know what it is and I don't think it's being examined in the Yellowstone.

Patty Standish Morris – I live at Pray. I have been a rancher, a hunter all my life. I was in the outfitting business from 1962 until 1976 when my husband died. My dad ranched and we had a close friend and he used to haul cattle, anything he could. Dad went to see him and he had a bunch of crates in his yard. This is in the end of the 50's. Dad said "what did you do with the crates?" He said, "I hauled six pair of wolves up to Yellowstone Park." This has never surfaced to the public. Whenever I brought it up, it was denied. During the course of our hunting, we saw wolves. We worked in Yellowstone Park at Madison Junction during the time of the earthquake, there were wolves on the flat at Elk Flats. We saw them, and our employees saw them. I know the Park Service has lots of archives—the government loves paperwork—and if you guys who say that these things weren't in existence have time, maybe you could go look through some of the paperwork and clarify some of your statements. I can't prove the things I just said, but I know that they are fact.

R. Doug Smith – I have not gone through all the government archives, but I have not been made familiar with the effort you talked about. I do know that prior to reintroduction there were sightings of wolves in the Yellowstone ecosystem, that wolves were passing through. But the fate of those wolves was unknown, the survival of those wolves was untrackable; and the point that was important was that there was not a population of wolves in Yellowstone and that has been verified by our radio collaring efforts. The wolves we released did not find other wolves that were not reintroduced. I'm not commenting on your comments at all, I'm just saying that's what we observed. The records on Yellowstone do indicate wolves moving through the area, but that once they are reintroduced, the reintroduced wolves did not turn up another population of wolves.

(Morris) Also I'd like to say during the fires in '88, I worked in the Park, and I saw a pair of young wolves at Canyon. They ranged over the mountain to the head of Hayden Valley. I saw them on six different occasions.

My name is Lynn Cornwell, I'm a rancher from Glasgow, Montana. I'm also the past president of the Montana Stockgrowers, and current vice-president for NCBA, so I feel a little bit out of place here with the outfitters and guides; but I'm a hunter and I've been a sportsman all my life so I feel qualified to address the predator issue. I want to thank John and the panel for addressing this issue because I think it's very important to the people of the state of Montana, and I'm a Montanan first of all.

In 1988, a three-year-old wolf was killed on our ranch. She was a wolf that followed a herd of antelope into the state of Montana from the Wood Mountain area in Canada. I just want to mention that that wolf spent the prior 3½ months on a band of sheep and ate about 400 lambs that summer. She did raise a batch of pups and nobody could find what happened to them. I just wanted to point that out.

Sixty-five percent of the 94 million acres in the state of Montana is privately owned. Another fact I'd like to mention is around 75 percent of the wildlife in this state spends at least part of if not two-thirds of their time on this deeded land base. It's a resource for the whole state of Montana and it's habitat that's provided by the private landowners.

My question is, when predators enter private property, what prevents landowners from protecting their private property? That's my first question. And secondly, does not the predator problem and the predator issue become a political issue as was mentioned here today; and is it not bigger than that, a financial issue, for those of us in Montana who try and make a living from this resource? And I guess, finally, my question would be, why should the private landowners in this state, the Montana hunters, the Montana outfitters and guides, the Montana sheep and cattle producers, be asked to bear all the additional costs of providing safe haven for these predators as a reintroduction attempt is made for the U.S. society as a whole?

John Mundinger: Two questions on the table. One is the rights of the private landowners when it comes to the predators that come onto private land; and two, payment for the reintroduction and how to share that cost.

R. Glenn Erickson – As far as state law goes, a private landowner can protect his property and life. The only thing that causes that to change is when the federal law supersedes it and on endangered and threatened species it does. The state has no authority over that. As far as funding for the recovery and after delisting, I guess that's one of the biggest issues for the state of Montana and the citizens here. That's going to be a tremendous cost to implement, even though it may go down some from what it is now; but it will still be a cost to us to implement the kind of program we're being asked to implement once the state takes over. We're looking for funding for that, and we think it should be funded by the federal government to the states in some fashion. We can share in that cost. I think we all believe that we could probably match or share in those kind of things, but it's going to be a big expense and we don't think it's fair for the sportsmen of Montana to fund the entire thing.

(Cornwell) I guess an additional comment I'd like to make is it's a very abstract feeling for me to try and attempt to arrive at what the real costs are for the state of Montana. The costs like not knowing how many calves you lost, not knowing where these wolves are at or not knowing what they're doing to the elk population, or the costs that no one can identify.

Bob Fanning, Friends of the Northern Yellowstone Elk Herd, a question for Mr. Hank Fischer. You mentioned in your speech that you were tired of the arguing; that you were hoping to find a common ground for discussion on the issue of wolf control and its impacts on the state of Montana. In the spirit of cooperation and in light of the fact the Defenders of Wildlife raised $14 million tax-free in a 501C and I realize you've done a lot of work and studies that said the cow/calf ratio should be 45 percent or 34 percent, and now it's 17 percent—and even up in our area it's 13 percent -- something is doing this. Since you put these things here, could you see if they are the source of this mess? Thank you.

R. Hank Fischer – There's times we'd really like to take all the credit for putting the wolves there, but I don't think we can do that. I guess what I'd tell you is that I honestly think, as much as any group, we have put money out to pay for this. We have put, I would probably say, close to half a million dollars now of our money into this operation. We have put money into livestock studies, and are going to continue to put money into research and that sort of

thing. And I certainly wouldn't rule out putting money into the research projects we're talking about here. So, let's keep talking about it.

C. T. Ripley, Huntley, Montana. I have a couple of questions for Doug Smith. One concerns whether you have noticed anything in your research that would document any kind of killing sprees with wolves, like we've occasionally heard about? Or are they always a clean killer and then they eat what they kill? Also, I noticed an inconsistency in some of your testimony about the wolves that supposedly weren't here. I know I saw one personally on Seal Creek in 1990. Apparently when the collared wolves were to meet up with these wolves they were supposed to mate with them, but earlier you said they were more likely to kill them. So I'd like to know which would be more likely.

R. Doug Smith – We have had instances where wolves have killed more than one elk at a time. Multiple kills have been made. Those tend to occur in late winter when snow conditions inhibit the elk. The winter of '96-'97 is an example. I think the response to that is wolves are predators that through time have been programmed to kill and usually killing everything they can is barely enough to survive. There happen to be some ecological circumstances—hard winters, deep snow, things like that—which make prey more vulnerable and they are able to kill more than one, and they do so, because their mindset is to kill. Most of the time they can't make multiple kills, but we have documented some, and utilization has been incomplete.

The second part of the question was lone wolves tend to pair and mate with other lone wolves to form a pair. It's packs of wolves that have the conflict. So when a lone wolf goes about moving around, its objective is to find another wolf of the opposite sex. The relationship is usually amicable and they form a new pack. One on one they don't usually kill each other. What happened is when all the wolves were brought in that were collared, lone radio-collared wolves traveled widely and we got visual observations of them. They were never with another wolf. When they did finally pair, it was with another wolf that we knew was there. I apologize for the inconsistency. I work at public speaking a lot; I'm still not perfect.

Bob Taylor again. I just wanted to take this opportunity to apologize for upsetting the guide from Billings. I didn't mean to reduce the tone of this discussion by bringing up the idea of deaths and injuries. It's just that having lived in California through all of this, I've seen a number of serious injuries and two deaths as a consequence of political dispute over forest management. I held the Unabomber's last bomb in my hand, set it down and walked out of a room thirty seconds before it blew up and killed my colleague, Gill Murray. Folks, this is life. It happens. Maybe it hasn't happened here yet, but I think it's not too soon to be thinking about it. It hasn't escaped my attention that Ted Kazynski was living in Montana at the time. So, I just wanted to tell you where I'm coming from.

My name is Susan. I live in Red Lodge, and I work for Hank Fischer. I'm neither a lawyer nor am I high paid, I assure you. I have two quick questions to Doug Smith. Earlier a gentleman asked you about the difference in philosophy between managing wolf populations and elk populations, and I was not satisfied with your answer. I would like to see if you

would try to articulate a little better that difference. I don't think anybody out here was satisfied with it either. Articulate a little better why NPS has two different philosophies.

A second quick question: to Hank it was suggested sort of semi-sarcastically that you get Doug to help you verify the predation incidence; and seriously, I would be interested in hearing your comment about how you go about the verification and why it's caused such a problem among the ranchers.

R. Doug Smith – I think the most important issue is that endangered species transcend political boundaries. The Fish & Wildlife Service manages endangered species. Inside the Park, the management of species is different than animals outside the Park because there is no harvest. So, to recover an endangered species they make an objective for a region that doesn't pay attention to political boundaries. When the wolves or elk or whatever that is go inside the Park, they get into a different management philosophy than outside. And when they're removed as endangered species that management status changes outside the Park, but it stays the same inside the Park because of the jurisdiction of National Parks.

R. Hank Fischer – Just quickly on the verification issue. When we set up this compensation program, we realized that if we were the ones doing verification it would set us up in a conflict of interest situation, so we looked to the agency that we thought was most trusted by the livestock community and felt that was Wildlife Services. So Wildlife Services is generally the entity responsible for doing verification of livestock losses.

The only other comment I'd make about that—by the way, I think Wildlife Services has generally done a very professional job of looking at the evidence and making an impartial call about it -- sometimes there is nothing there but a few bones. It is very hard in those instances for Wildlife Services to say that that is a wolf kill. Our policy is once there is a verified wolf kill on a person's operation, we are fairly liberal at that point of interpreting bone piles as wolf kills and at least awarding a partial payment, if not a full payment.

Paul Ellis from Bozeman. I'm an outfitter and a sportsman and I have a couple of questions and issues to bring up. A lot of the outfitters and hunters during the late seasons are seeing far less calves to cow ratios than you're reporting. I guess the main issue is, I think everybody wants to know if the packs of wolves are going to about double—is that what you're predicting to get to your number? (Smith) I don't think so; the population's starting to level off. I think there will be some new packs formed in new areas. I think we will get to our objective in a few years, but I don't think it's going to double. The objective for the Yellowstone ecosystem is about 10 breeding pairs. Right now that's about 115 to 120 wolves. I think there will be only modest increases from here until delisting.

(Ellis) I guess the main question is can you assure the Montana hunters, outfitters and sportsmen that the number of wolves is not going to devastate the herds to a point where they will not come back to reasonable numbers. I think that's what everybody wants to know.

R. Doug Smith – I am not going to underestimate the ability of the wolf as a predator. They are very good predators. I'm not saying they don't need management. I'm saying that many

voices need to be heard, balances need to be struck, people need to decide what they want to do. Outside the Park, the state has to be involved. I think there is a successful management strategy for wolves after delisting with regard to the herds. They are a very effective predator and probably do need management. Inside the Park it's a different story. I think it's a sticky problem, it's a tough problem, but there can be solutions.

Brian Severin – I'm a rancher and a member of the Montana Stockgrowers Association. I have a ranch at Belt and I also lease a ranch in Paradise Valley. In fact, I border Yellowstone Park. I'd like to speak to the question someone asked about the compensation. I think things really need to change. I understand from listening to what's gone on here today that you folks in the outfitter business are seeing a financial impact from the wolves. Believe me, people in the livestock business are really going to start seeing an impact. I want to give you an example. Just on one piece that we graze, it's about 7,000 or 8,000 acres and we turn about 150 pairs in there. We go in the first of June and come out the 15th of October. We ride that pasture about once a week. It takes a man all day to ride that place, and he'll probably not account for more than 30 cows in that day. It's up and down with lots of timber. So far we haven't had any wolves in there, but now this winter we're seeing lots of wolves, lots of signs. In fact the hunters in that area this year saw more wolf sign than they did elk sign. So, next summer when we turn our cattle out, we've got a dilemma. What do we do about this. Probably we can do what we've always done and go check it once a week, and wait till we gather to find out what's going on. We may find a couple of bone piles and turn up a few calves short, and we probably won't get compensated at all. Or we can say, 'we have to keep track of this and send a man up there to ride it every day.' I defy any man here to find a man and put him on the payroll and have him cost less than $100 a day. So that means the extra six days a week we ride costs me more than the value of a calf a week. We're up there 18 weeks, I might just as well shoot 18 of those calves myself. That's just to go check it. Since we're only going to find maybe 20 percent of the cattle each day, we're probably still not going to find any of the kills if we have them. Suppose we lose six or eight head and we find one or two in time to get compensated. We might get $1,000 in compensation, but we spent the value of 18 calves just checking on it. Then we lost another four we didn't get done. That's $11,000, folks.

We've got ourselves in a real mess and the people that are going to pay the bill are the people in this room, not the federal government. The million dollars we spent getting them here isn't the big problem. We've got to spend some serious time figuring out how we're going to deal with wolves. Thank you.

R. Ed Bangs – I think that's a really good point and it's something the Fish and Wildlife Service takes very seriously. Last year in Idaho we had a similar situation, a guy came out about 30 head short of what he did the year before. We've actually instituted a study where we collared like 250 cattle, put them up in an area with wolves, and looked at the mortality rate. We actually had wolves kill some of those, only one or two of those was confirmed. Four or five weren't found. It appears when you have a confirmed kill, you may have between one and five that aren't found. There are also indications that cattle grazed in more open habitat with a herder on them were less likely to have wolf problems than guys that grazed in heavy thick timber. We are aware of that. We ended up shooting out most of that

wolf pack, by the way, which took care of that problem. We are concerned and realize it's a problem, but it's a very difficult one to get a handle on.

Vic Jackson – I own and operate Skyline Garden Service. I also ranch. I'm from Belfry, Montana and operate out of Cooke City. We put 1,500 guests on horseback in 3 months. The question that always came back to me was "Vic, how come we don't see any moose in the Slough Creek Drainages, Pebble Creek Drainages, the Lamar?" I hunted 21 straight days. We usually see between two and five moose a day. In 21 days we saw two. We also take a lot of flyfishing trips to the Park. Everyone asks "where are the deer? Where are the fawns that we used to see in Slough Creek?" They are not there. They're not there.

My grandpa started our outfitting business in 1932. I want this business brought down to my son and to my son's son. And right now, I'm scared because my clients know it's not there. They're the ones that are telling me. That's one thing I want you guys to know. In the areas that I'm operating, the game that used to be there is not there. Not just the elk. I'm talking about the moose and the deer.

Lee Bridges. I got cut off before I finished my comment. I wanted to comment about the politics involved with management of these predatory animals. I wanted to tell you I've outfitted, I've hunted both sides of the Montana/British Columbia border for the last 11 years. I think there's just as many grizzly bears on the Montana side as there is on the BC side. I think there's just as many mule deer. I think there's just as many whitetail. I think there's just as many wolves. I just wanted to point out the difference in the regulations. In British Columbia, we have a three-month spring bear season; we can shoot two bears. We have the same season again in the fall for black bears. We have a grizzly bear hunt. We can hunt mountain lions up there and we can shoot two of those. In the Rocky Mountain trench we have a year around open season to shoot wolves.

I have a question for Mr. Fischer. I got in a discussion with one of your members and this person was telling me that your wolf depredation fund was a real good fund-raiser for you. Could you give me a ballpark figure of how much money you have collected from your membership for your depredation fund?

R. Hank Fischer – We've got about $200,000 in the fund and we've spent about $100,000.

Lee Hart – I'm a native Montanan. I'm a landowner and I'm one of those dying breeds on the endangered species list known as an outfitter. There's been a lot of talk here about habitat. I have one particular spot I'd like to mention. In '96, through a combination of the efforts of Conrad Burns, Max Baucus and many other diligent individuals, the famed game-rich area in the Gallatin known as the Porcupine-Buffhorn-Elkhorn Game Habitat Area consummated a land trade and a land buy-out to the tune of about $8 million plus the land exchanges. Those of you that are Rocky Mountain Elk Foundation members, you helped foot a loan that was $3.8 million to help consummate that piece of ground. This is great. I just happen to be the outfitter in that area. At the close of the season this last year, November 26th, I completed 30 years of outfitting in that area. Ten years ago, my hunters would see—everyone in camp—10 to 50 head of elk per person most of the hunting season. Let me tell

you about the last two years. In 1998 in the last two weeks of the season (typically our better two weeks) we had 12 grizzly sightings, 2 wolf sightings. We saw approximately 80+ elk, five moose (one was harvested), and that was the only bull that we saw. '98 wasn't a good year. Ninety-nine was probably a lesser year, but in '99 twenty-one grizzly sightings, 4 of them serious where we had bluff charges—some of them repeatedly—at us, both on horse and on foot. Nine wolf sightings. A total for the two weeks: 14 elk (no calves), 3 moose (no calves)—two of those moose we harvested. Folks, this is that game-rich area you just paid $8 million for. There's nothing there.

Ken Sinay, Bozeman. I'd like to get back to my question a little bit earlier. What I was kind of looking for was numbers. I'm hearing a lot of concern about the amount of game that's out there. Under recovered population of Yellowstone wolves, what kind of numbers of elk can we expect them to consume under recovered population and continually dispersing population? Considering that some portion of those elk that are consumed by wolves is no longer available to hunters, what can we expect that to do to hunter opportunity?

R. Doug Smith – We're basing our estimates right now on wolf kill rates based on a per pack basis for certain areas, so we would have to know more of the year what the kill rates are. Right now they're just a 30-day period early and 30-day period late. It would be based on a per pack basis of how many elk per year they take, what kind of elk they are; and then we'd have to do additional studies to understand wolf predation in the summer to get that estimate more refined. Right now, we'd be making multiple assumptions to expand our kill rates for the whole year.

R. Ed Bangs – In the EIS we got all kinds of Ph.D.'s to make a bunch of guesses and most of us make better historians than prophets. In the EIS it was estimated that 100 adult-sized wolves would kill the equivalent of 1,200 elk-sized animals a year. If you have 150 wolves, then they're going to kill 1,800 a year. The EIS predicted the recovered wolf population, which was 100 adult-sized animals which we're a little bit over that now, would reduce elk populations between 5 and 30 percent depending on the herd. The estimate was that wolf predation would cause some decline in elk numbers.

My name is Jim Vesbach. I live in Hardin. I'm not a native Montanan. I'm not a rancher. I've just lived here for 25 years. I don't have a degree in Wildlife Biology; I only believe a portion of what you tell me. I'm not a member of the Legislature; I don't believe anything they tell me. I'm not an outfitter or a guide; I think you've done more to reduce my opportunities than the wolf probably would. I was vehemently against the reintroduction of the wolf to Yellowstone Park. My son, however, was very much for it. I respect his opinion. He's hunted and fished with me since he was two years old. We've debated this at length and have long since come to the conclusion that the wolf is now here to stay and we need to move on to the management. I would suggest to you that it is great for us to come into this room and air our differences. We need to do that. But, as a group, you guys possess more knowledge on the wolf than any group in the United States, and that's on all three sides of the table. What I would propose is that the state of Montana immediately form a group and put on it a member of your Fish and Game Commission, a member of the Outfitters Association, a member of the Defenders of Wildlife, a federal and state biologist, and come up with a plan

as to how Montana is going to regulate the wolf once it is delisted. We have to have this done. If we don't, we're going to see the same situation we had with the buffalo; when the buffalo began moving out of the Park, we had no plan to deal with it. As a sportsman, at some point in time if the wolf is delisted and there is a plan out there, I'd very much like to be involved in the harvesting. Thank you.

My name's Elaine Allestad and I'm from Big Timber. I wear a lot of different hats, but today I'm wearing a rancher's hat. We run our band of sheep in a wilderness area just north of Yellowstone Park, and this summer we lost a substantial number of sheep. I called Mr. Fischer's office and left two messages with Minette Johnson, and I never did get a call returned. I don't know why, I just never did, so I just gave up on it.

Then I had a question for Dan Pletscher. You stated earlier that you would oppose delisting if there was less than 10 breeding pairs in each area because of genetic diversity. I want to know who "we would oppose" is and also I want to know how many you think would do the job for the genetic diversity.

R. Dan Pletscher – I don't think I said we. I said geneticists would oppose that. There's a lot of discussion on what a viable population, if it's totally isolated, would consist of; and it really depends on what your ability to accept risk is and for how long you would want to sustain that population. For example, if you wanted to sustain a population of blue whales for five days, you probably wouldn't need very many blue whales. If you wanted to sustain them for 100 or 500 generations, you would need a lot more. So how many you would need depends on your degree of risk. What we've got going for us with wolves is that they disperse long distances and they are connected to a huge population of wolves that go all the way up to Alaska and all the way over to the east coast of Canada. As long as we maintain that genetically, we're in pretty good shape. If you sever that genetically then you have an island population with no genetic interchange with a broader population, and you're in big trouble. The importance of the northwestern Montana area is that that's the closest population to all of those wolves farther north. If you take that one out of the equation, I think most geneticists would argue you are asking for lots of trouble.

(Allestad) My question went on: then how would you oppose it and wouldn't that elongate our delisting? (Pletscher) Again, I did not say that I would oppose it. I said that you will get people who are very concerned with maintaining wolves in the lower 48 who would oppose it on those grounds. I'm a firm believer in getting wolves to the point where they can be delisted so that the sorts of things the people have been talking about here today can happen. Mainly, that the states can get involved so the people in those states can feel they've got some control over what's going on in their states. To do that, we need to get to the point where they can be delisted. The same thing with the grizzly bear and a variety of these other species.

I'm Keith Bales. I'm a rancher. I'm president of the Montana Stockgrowers Association. I guess I'm somewhat concerned. I've sat and listened to these gentlemen say that in the northwestern part of the state of Montana you didn't feel you could reach the 10 breeding pair due to the fact the prey base was down. Then we discussed a little more that you thought you

could keep 30 pair together in concert. Yet when we start to look at the figures of the calf on the elk coming out of the Park and so on, it appears to me—I know if my cattle numbers were that way, my population would go down dramatically rather shortly—that probably your prey base in Yellowstone Park is going to be going down too. What affect will that have? Will you then not be able to sustain 10 packs or 11 packs or whatever is there at the present time? If that's the case, what does that lead us to for delisting? That's one question. I have a second question on top of that. Does anyone want to try and address that?

R. Doug Smith – I don't think the Yellowstone ecosystem will be similar to northwest Montana. I think there are adequate ungulate numbers there. There's two, maybe three new pairs in the offing this winter outside the Park. We don't know for sure yet. And I think we will be over the 10 breeding pair limit. That won't be a problem in the Yellowstone area.

R. Dan Pletscher – I think there probably are 10 breeding pair in northwestern Montana right now. They're not documented. I suspect there are some folks sitting right here in this room who know where there are additional wolves. I think it's in the best interests of everybody in this room to let somebody know about that so they can be counted and so wolves can be delisted as soon as possible.

(Bales) The other question I have is we are told over and over again that the Endangered Species Act takes precedence over our private property rights to protect our property. I would like to ask the people who are in essence managing the endangered species, where does it say in that Act, if it does that we do not have the right to protect our private property.

R. Chris Servheen – The grizzly bears are covered under what's called a 'special rule' and that special regulation says that grizzly bears can be killed in self defense or defense of others. To protect private property and to deal with private property conflicts, we have a very elaborate system of people both at the state level and the federal level, to respond right away with grizzly bear problems. There are people at the state level, in this area, in Wyoming, in northwest Montana that will respond immediately if you have a conflict on your property related to grizzly bears. We will catch that bear and either move it or destroy it to relieve the problem on your private land. We don't want grizzly bears getting into trouble on private property, and we'll deal with it right away.

(Bales) State the law. (Servheen) The law says that grizzly bears can be killed in self defense or defense of others. I don't know about the wolf issue. That's how grizzly bears can be killed. And that's in the grizzly bear 'special rule' and it's in the code of federal regulations. I don't know the details on the wolf. I can't speak to the wolf issue. It's probably similar on the wolf.

John Mundinger: Doug is saying that it's the same for wolves.

I'm Tom Heinz. I'm chairman of the Gallatin Outfitters Association, and we would like to ask you to do two things to improve the situation. One, we would like you to undertake a serious study of calf mortality in the early summer so that we can get a clear picture of how many elk are really being killed by wolves. We believe that there's at least 2,000 elk that are

being killed that are not in your count. And two, we'd like to see you take somebody along on your elk counts that has credibility with the hunting public so that the numbers on those counts are numbers we can believe. Maybe that would get rid of a little bit of the mistrust in how many elk are really out there.

R. Doug Smith – Tom and I are friends. We do much better talking quarter horses than wolves. I've spoken in his group before and I thought I was credible with you, Tom. I'm sorry that you don't think that I am. We do hope to do an elk calf mortality study; however, the first part of that will be collaring adult cow elk, hopefully this winter, for some of the reasons that Dan talked about in terms of adult female elk survival and distribution. Once that gets off the ground, the second part of that study will be addressing elk calf mortality. I'll let Glenn answer the second part of the question about the surveys.

R. Glenn Erickson – I think the question was are we going to do the surveys at the right time. We are going to get that done.

John Mundinger - While Jean Johnson and Chris Smith are coming up, I just want to thank you for being a very cooperative audience through what has been a bit of a difficult discussion. I think you're to be commended for your patience with me and for the congeniality you have shared with others whose perspectives on this issue may be a little bit different than your own. I would hope you would agree with me that we have made some progress in at least coming a little bit closer to a common understanding of certain issues related to predator management. I hope you also agree it is easier to deal with some of these issues in an environment where there is opportunity for free exchange of information.

Jean Johnson – Concluding Remarks

This has been a truly extraordinary day and the Montana Outfitters and Guides Association thank each and every one of you for making it so. Very briefly for the benefit of the public panels, these are not all outfitters. These are sportsmen, and landowners and outfitters. We don't have this many outfitters in the state of Montana all put together, I don't think. This is a gathering of public interests that are concerned about the situation as we see it today.

The one thing this day has shown is we have a common concern and a common goal, and perhaps this is the beginning of an opportunity for us to work together. There's a gentleman who spoke about staying together and working together into the future, and I hope that's what comes out of this day. The MOGA Board of Directors will continue to work with its members on this issue to develop and draft its own resolutions and we'd like to share with the sportsmen and landowners in that endeavor.

Thank you very, very much.

Chris Smith – Concluding Remarks

Thank you Jean. I'd like to echo Jean's remarks and John's as well in thanking everyone in the room today for your participation. This has certainly been a lot better and a more

constructive dialogue than some of us thought it might have been. I guess I didn't need the black jacket I borrowed from our warden captain.

I do want to mention just a couple of things I heard and I think are important: quite a bit of the discussion today dealt with funding. Who's paid for the reintroduction of wolves; who's going to pay the costs in the future, both direct and indirect. Just before he sneaks out of the back door back there, I guess I'd say again for the benefit of Senator Burns, one of the positions that certainly FWP takes is that it is time for all Americans to begin to pay the costs of managing all of the species of wildlife. The Conservation and Reinvestment Act (CARA) that Congress is currently debating is probably the best vehicle and the best hope we have right now of securing that funding. Doing so through the federal government from an appropriate revenue source is the right place to begin to pay some of these costs that sportsmen have been bearing entirely on their own for many years.

A question came up about PR funds and whether the state was going to ask the Attorney General to pursue recovery of funds that were spent by the Fish & Wildlife Service. To my knowledge, the audit that was conducted did not indicate any illegal spending. There was certainly spending by the federal government that the states did not consider appropriate and management of that PR funding was seriously questioned. One of the issues that Pat Graham is discussing today with other FWS people is a comprehensive set of recommendations for future management of both Pittman-Robertson and our Wallop-Breaux, which is fisheries side of that operation, to substantially reduce federal discretion on how that fund is used and the percentage of those funds the FWS can use for administration of the fund; and imposing a number of tighter administrative constraints to ensure the money is used responsibly. I think the issues related to costs are very real, and some of those are being addressed, some of those can be addressed, and certainly more will need to be taken up.

One of the most positive things that I heard today was actually something I didn't hear today. Twenty-five years ago when I started working with wolves and predators in Alaska, one of my neighbors in Fairbanks, who was a perennial candidate for governor, said in a campaign speech he'd gladly shoot the last pregnant bitch wolf on the capitol steps in Juneau. He wanted the last wolf gone from Alaska. He was never elected governor, but one of the things I didn't hear anybody in here say today is that we need to get rid of predators. I heard almost everyone say we need responsible, timely, adaptive management. So, we've got some good common ground to start from.

As has been mentioned a couple of times the Department of Fish, Wildlife & Parks recently made a commitment to put together a Citizen Advisory Committee to help us develop a wolf management plan for the state and continue to be responsive with respect to lions, coyotes and other predators. I think there's a lot of opportunity for us to move forward. The keys again are that whatever plans or actions we take to be timely, adaptive, responsive to people's needs, and we want to make sure we include all of you in the discussion. I know in speaking with Director Graham, he is committed to moving forward in an open fashion and involving all of you, and I'm certainly going to report to him that today's effort was beyond our wildest expectations in terms of a positive interchange. I look forward to continuing to work with all of you as we move forward to deal with these problems. Thank you.